

Dental Digest

June 1955

IN THIS ISSUE

Practical Outline of Gingivectomy	246
Oral Hygiene	252
Use of Aluminum in Full Mouth Reconstruction	253
Excision of a Lower Molar: A Case Report	256
Dental Caries and Diet	257
High Speed in Amalgam Cavity Preparation	258
Causes of Headache and Their Mechanisms	265
Prosthetic Aid for Facial Paralysis	266
Clinical and Laboratory Suggestions	270
Oral Hygiene and the Biologic Sciences	272
World Program for Dental Health	277

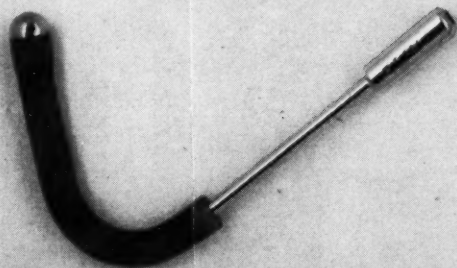
(A Complete Table of Contents
appears on page 245)

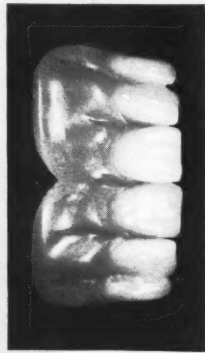
Cover illustration—Neilson
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Dental Digest

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JUNE 1955**About Our****CONTRIBUTORS**

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A Practical Outline of a Gingivectomy <i>J. W. Neilson, B.A., D.D.S., M.S.</i>	246
Nutrition (An Abstract)	252
Cast Aluminum in Full Mouth Reconstruction <i>M. I. Tendrich, D.D.S.</i>	253
Hemisection of a Lower Molar: A Case Report <i>H. H. Pearson, D.D.S.</i>	256
Dental Caries and Diet (An Abstract)	257
High Speed in Amalgam Cavity Preparation <i>Harold C. Kilpatrick, D.D.S.</i>	258
Varieties of Headache and Their Mechanisms (An Abstract)	265
A Prosthetic Aid for Facial Paralysis <i>George Balber, B.S., M.S., D.D.S.</i>	266
Clinical and Laboratory Suggestions	270
1. Accurate Seating in Full Crown Castings. 2. Fitting Cast Crown or Cast Clasp. 3. Precautions in the Use of Investments. 4. Identifying Cutting Instruments. 5. Shipping Stone Models. 6. An Esthetic Temporary Crown.	
Medicine and the Biologic Sciences	272
World Program for Dental Health (An Abstract)	277
The Editor's Page	269
Contra-Angles	278

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708 Church Street, Evanston, Illinois

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The magazine is mailed on the fifteenth of the month of issue.

A Practical Outline of a GINGIVECTOMY

J. W. NEILSON, B.A., D.D.S., M.S., Seattle

DIGEST

The step-by-step technique for a gingivectomy procedure that is described in this article can be completed with a modest armamentarium by the general practitioner. It is suggested that failures in the technique are often due, not to improper surgical measures, but to postsurgical inadequacies on the part of the dentist and the patient. Postsurgical steps are therefore outlined in detail.

General Purposes of the Operation

The following are the general aims of the operation:

1. A healthier oral cavity and periodontium
2. Removal of the gingival pocket (in contrast to the so-called "intra-bony pocket") or interproximal crater (often self-perpetuating lesions)
3. The provision of better access for scaling and debridement by the dentist
4. The provision of better access for home care by the patient
5. The provision of better gingival contour for esthetics or restorations

Specific Indications for the Operation

The operation is indicated in the following situations:

1. Periodontitis simplex
2. Periodontal hyperplasia
3. Chronic necrotizing gingivitis (removal of interproximal crater)
4. Horizontal bone loss (accompanying pocket formation)

5. Comparative shallow, wide, gingival pockets (in contrast to the so-called "intra-bony pocket") or pseudo-pockets of over 2 to 3 millimeters in depth

6. Preoperative removal of excess tissue in restorative dentistry

7. After removal of acute inflammation

8. In situations where the patient is cooperative

Specific Contraindications for the Operation

1. Simple gingivitis
2. Periodontosis
3. Periodontal atrophy
4. Acute periodontal infection
5. Acute necrotizing gingivitis
6. Periodontitis complex (most cases)
7. Vertical bone loss
8. Deep, narrow, intra-bony pockets and/or craters
9. The presence of acute inflammation or sepsis
10. Esthetically unacceptable locations (the lip line is important here)
11. Excessive destruction of periodontium
12. Excessively mobile teeth
13. Malposed teeth
14. Most bi- and trifurcation involvements
15. Cases where caries is rampant and/or active
16. Poor surgical risks
17. Uncooperative patients

Basic Armamentarium

The following items (Fig. 1) comprise the basic requirements for the operation:

(a) local anesthetic paraphernalia* (2 per cent xylocaine® hydrochloride with 1:50,000 epinephrine)

(b) Mouth mirror, cotton pliers, periodontal probe* (Waltzer-Clev-Dent)

(c) Cotton pellets, surgical sponges (2 x 2, or 2 x 1)

(d) Saliva ejector

(e) Periodontal curettes* (Nos. 10 and 11 of University of Washington Set, American Dental Manufacturing Company, Missoula, Montana)

(f) Gingivectomy knives:* (1) Orban 1 and 2, (Colorado Dental Supply, Majestic Building, Denver 1). (2) Crane-Kaplan No. 4 double-ended (Hu-Friedy)

(g) Small curved surgical scissors (ophthalmic type)

(h) Postsurgical dressing,* liquid and powder (Challies Dental Products, Morrisburg, Ontario)

(i) Heavy spatula and mixing slab

(j) Beavertail burnisher

(k) Trichloroacetic acid (20 per cent solution), for use at the time of postsurgical dressings only

Additional Armamentarium

The following items are useful but not essential:

(a) Electro scalpel* (Radiosurg Scalpel, Electrosurgical Appliances, Philadelphia)

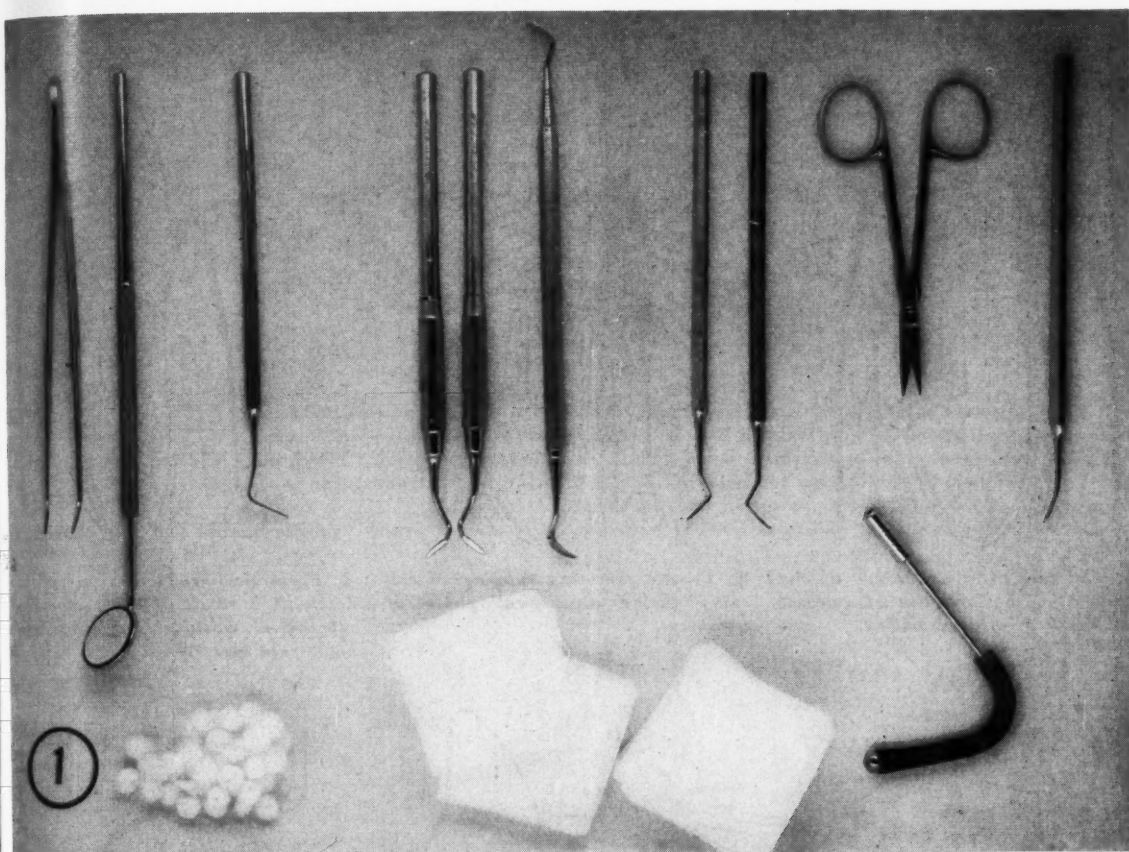
(b) Aspirator (hemorrhage)

(c) Fingernail cuticle clippers (used for festooning soft tissue areas)

(d) Indelible pencil

(e) Rubber gloves (for asepsis and

*The item specified has proved helpful in the author's hands and is only one of several available. With experience, every operator will develop his own personal likes and dislikes toward these and other similar items. The manufacturer's name is included herein only for the convenience of the reader. Mention of such products should therefore not be regarded as an endorsement.



easier manipulation of dressing)

(f) Medications (adults):

(1) Racemic epinephrin* (8:100), for hemorrhage during surgery, (Pascal Company, Inc., Seattle 9)

(2) Tolserol®* (.5 grams to 50 pounds of weight taken on a full stomach three quarters of an hour prior to anesthetic, presurgically)

(3) Codeine sulphate (30 milligrams every three hours, postsurgically if necessary)

(4) Sodium fluoride paste* (equal parts NaF, kaolin, and glycerine) desensitizer

Technique:

Presurgical Measures

The following measures may be completed in anticipation of surgery:

(a) At previous appointments the field is cleared of as much debris, calculus, and stain as possible (Figs. 2, 3, and 4).

(b) The patient has been taught proper home care procedures and

1. Basic armamentarium on surgical tray: from left to right above, cotton pliers, mouth mirror, periodontal probe, three gingivectomy knives, two periodontal curettes, scissors, beavertail burnisher; below from left to right: cotton pellets, sponges, saliva ejector.

sufficient time has elapsed for these procedures to have their *probable* optimal effect (Figs. 2, 3, and 4).

(c) Premedication is indicated in apprehensive patients.

(d) The area is anesthetized; adequate but not profound anesthesia is necessary; infiltration or conduction may be applied as indicated or preferred.

(e) Periodontal dressing is mixed stiffly with a heavy spatula, approximately 8 drops of liquid to 1 level teaspoonful of powder for an average case of a full quadrant. Lay aside a roll of dressing for the lingual area and cut the remainder into triangles, one for each facial interproximal space (Fig. 5).

Surgical Procedure

Plotting Pocket Depth, Figure 6—

(1) Use the periodontal probe as a marker.

(2) The pocket depth is the most reliable landmark.

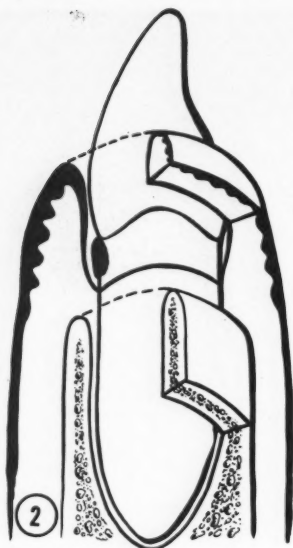
(3) Make bleeding points at pocket depths (3 facial bleeding points and 3 lingual bleeding points per tooth).

(4) Connect the points with an indelible pencil line if desired.

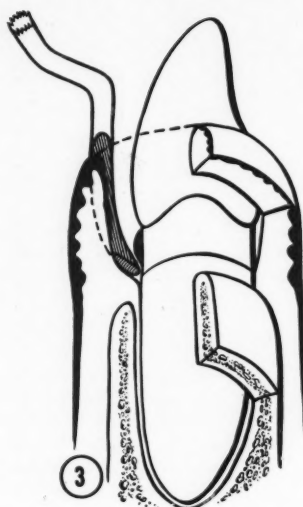
Line of Initial Incision Important, Figures 7 and 8—(1) Make the incision apical to the bleeding points in order to ensure a properly bevelled contour (Fig. 7).

(2) Make the incision apical to the gingival crest and into an interproximal space. *Do not* make it from the free gingival margin (Fig. 8).

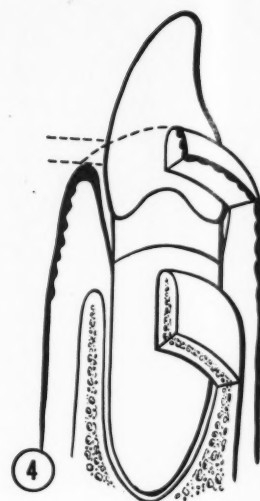
(3) Insert the knife well into the interproximal space before proceeding along the line of incision (Figs. 7 and 8).



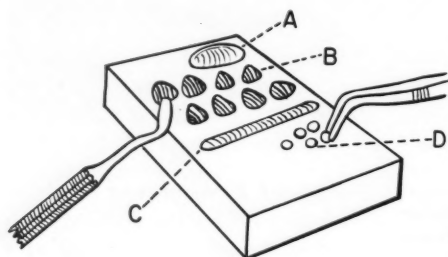
2. The case prior to therapy of any kind. Note the presence of calculus and depth of original pocket.



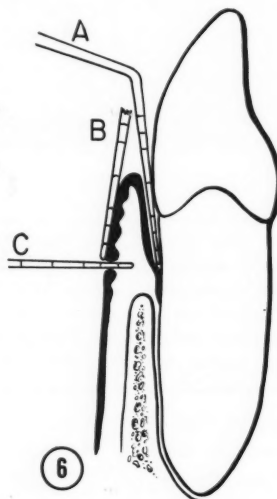
3. Curette removing subgingival calculus during presurgical phase of treatment.



4. Presurgical reduction in pocket depth as a result of the removal of subgingival calculus and subsequent home care measures.

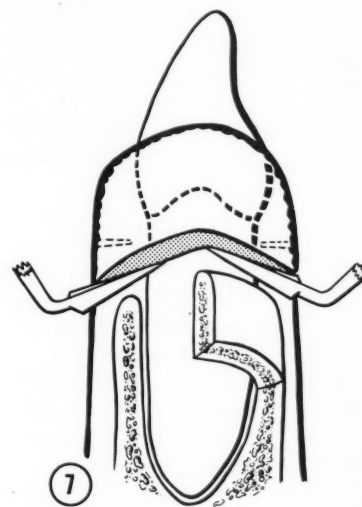


5. Surgical dressing mixed on slab (A); triangular pieces of dressing (B); lingual strip (C) cotton pliers and moist pellets to aid during insertion (D).



6. Plotting of pocket depths: the

probe is inserted into the pocket (A); the probe is withdrawn and placed on the mucosal surface to a similar depth (B); the probe is rotated 90° and plunged into the mucosa, thus creating a bleeding point (C).



7. Line of initial incision is outlined here in cross section: note that the incision is bevelled from a point apical to the bleeding point and also that the incision is made interproximally, extending well into the interproximal tissue and well below the gingival crest.

Progress and Termination of Incisions, Figures 7, 8, 9, 10, 11, and 12—(1) Maintain a bevel throughout progress (Fig. 7).

(2) Use a continuous slicing incision.

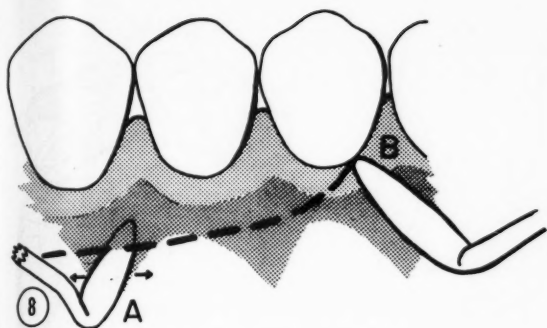
(3) Use teeth as "backings" against which the incision is made

but avoid dulling the instrument in the process.

(4) Complete the facial incision before incising lingually; follow the same procedure in making the lingual incision and try to terminate it *interproximally* in the facial incision (Fig. 7).

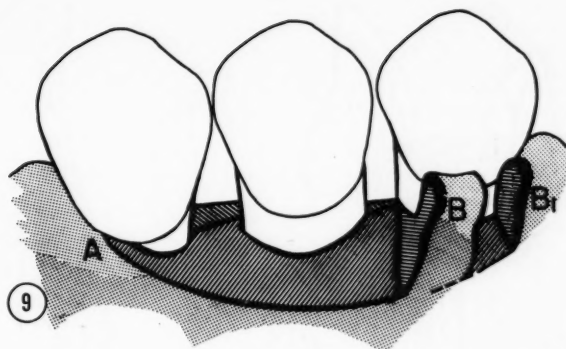
(5) Facial and lingual incisions usually terminate in the facial and lingual margins respectively rather than in an interproximal area (Fig. 9).

Removal of Incised Tissue, Figures 10 and 12—(1) "Tease off" and lift away the entire excised facial and

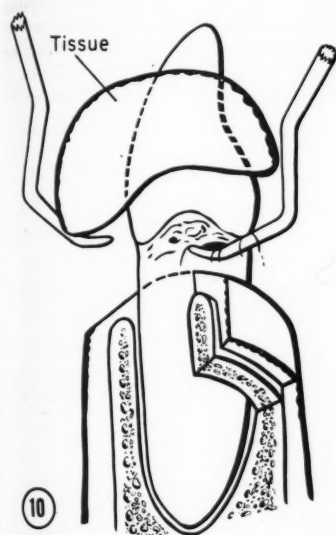


8. The point (and line) of initial incision are outlined here from the facial aspect: the point of incision is in interproximal space (A) and the knife moves mesially and distally from A. Improper incision point on the gingival margin is indicated at (B).

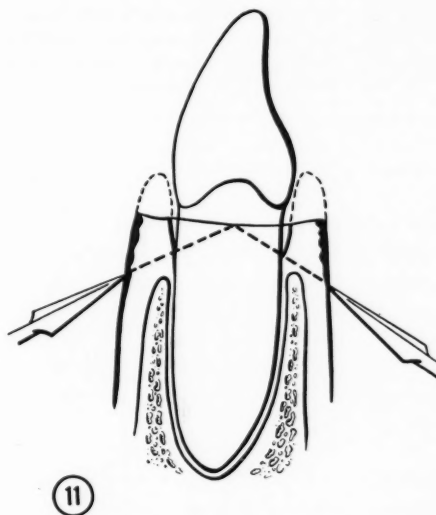
9. A represents the ideal location at which to finish the



mesial (or distal) end of the incision which should flow into the normal gingival contour on the facial surface of the tooth. B and B₁ represent improper locations at which to finish the distal (or mesial) end of incision. Note B and B₁ undesirable sharp angulation with the gingival margin on either of the proximal surfaces of tooth.

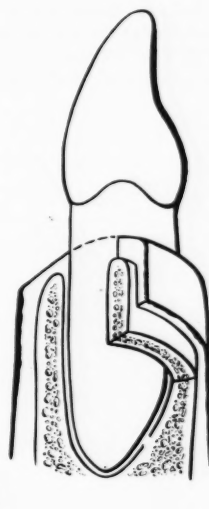


10. Wherever possible, the entire excised tissue is "teased off" with a periodontal curette following the union of facial and lingual incisions interproximally. Removal of loose and attached bits of tissue (and calculus) is then



undertaken with the curette.

11. In this figure an incorrect unbevelled initial incision has been made. Corrective incision (dotted line) is made more apically as a completely new incision into previously undis-



turbed tissue and not from the surface of the initial incision.

12. The area that has been operated upon is now ready for reception of postsurgical dressing.

lingual tissue with a curette rather than with the knife. Do not tear away large sections of tissue (Fig. 10).

(2) Use a curette to pick off loose bits of tissue (Figs. 10 and 12).

Correction of an Improper Incision, Figures 11 and 12—In case of an improper bevel, start the new and corrected bevel in an interproximal space at a point apicalward from the surface created by the previous incision (Figs. 11 and 12).

Other Points of Interest—(1) Obviously, aseptic technique should be followed as closely as possible.

(2) Ideally, 1/6 or 1/4 of the mouth is done at a time. More may be undertaken in unusual circumstances.

(3) Frequency of operation may range from 1 to 5 weeks, depending on particular circumstances.

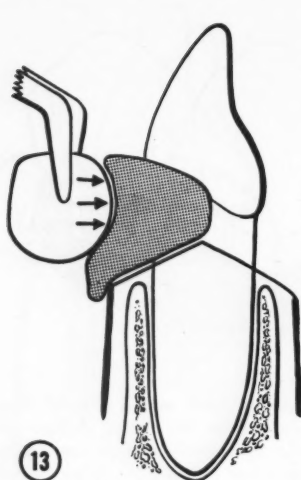
(4) More meticulous scaling of teeth may be undertaken on the day

of surgery or later; there are practical advantages in either procedure although the former is preferable.

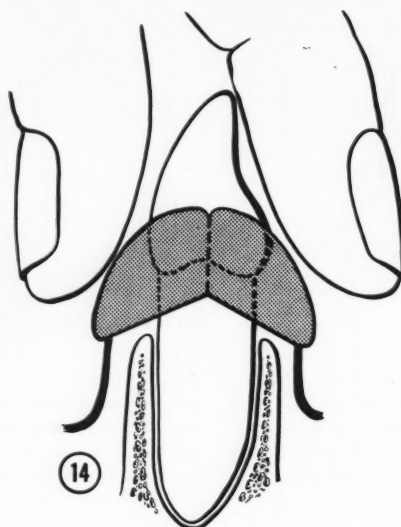
Postsurgical Procedure

Insertion of Initial Dressing, Figures 5, 13, 14, and 15—(1) Pick up a triangular piece of dressing with a beavertail burnisher and from the facial aspect, deposit the dressing in the interproximal space (Fig. 5).

(2) Repeat the procedure in the

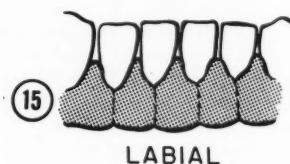
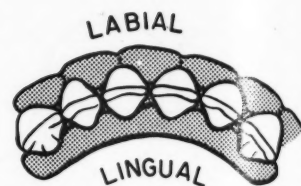


13. Use of a cotton pellet (moistened) ensures close adaptation of dressing to area of surgery.

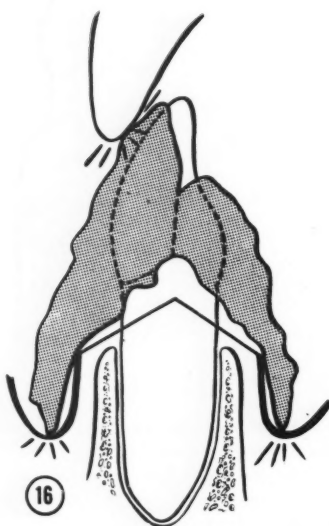


14. Use of the fingers (moistened) also ensures close adaptation of the

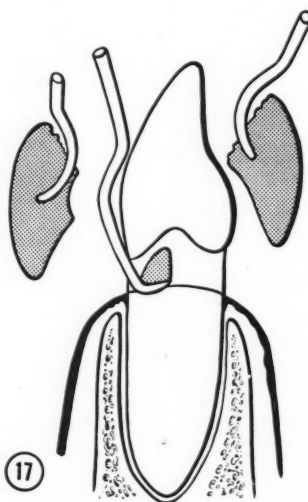
dressing to the area of surgery. Note as well the dressing's sufficient (but not over) extension, its reasonable esthetics, its smooth exterior and its clearance of occlusion.



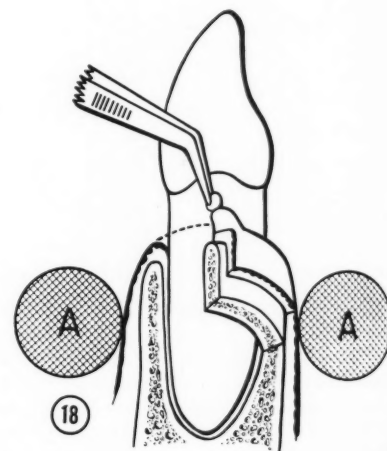
15. Two views of completed dressing, showing lines of fusion between various pieces of the dressing. Note the single lingual dressing in contrast to the several labial "triangles" employed.



16. An improperly placed dressing, illustrating the bad features of poor adaptation, poor esthetics, overextension, occlusal interference, and rough exterior.



17. Removal of a dressing with curettes and subsequent removal of any remaining interproximal fragments of the dressing. These fragments should not be overlooked but should be spe-



cifically noted and withdrawn.
18. Application of trichloroacetic acid to an area of overgranulation following removal of dressing. Isolation of area with cotton rolls (a).

other interproximal spaces (Fig. 15).

(3) With a moist cotton pellet (and moistened finger) adapt the dressing closely to the interproximal area and contour a smoothly finished facial surface (Figs. 13 and 14).

(4) Place the remaining roll of dressing on the lingual and with a

cotton pellet adapt and contour the roll to proper position. Final digital pressure unites it interproximally with the previously placed facial dressing (Figs. 13, 14, and 15).

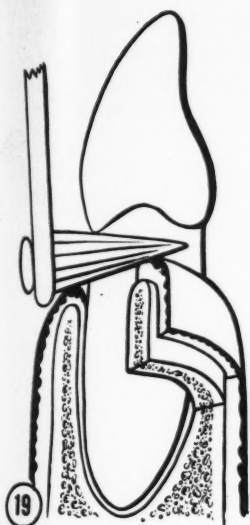
Pitfalls During Insertion, Figure 16—(1) Failure to secure close adaptation to surgically treated area

(looseness, overgranulation and pain)

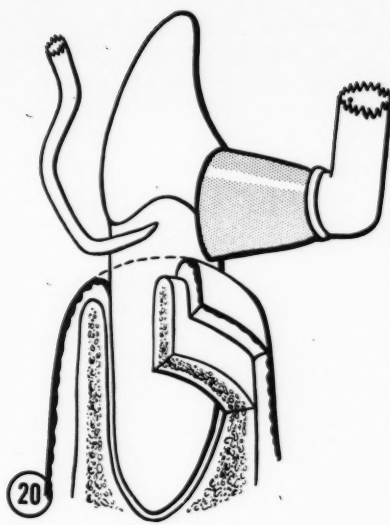
(2) Failure to cover the entire surgically treated area (pain and overgranulation)

(3) Failure to clear occlusion (pain and dislodgment)

(4) Failure to clear musculature (impingement, ulceration, and pain)



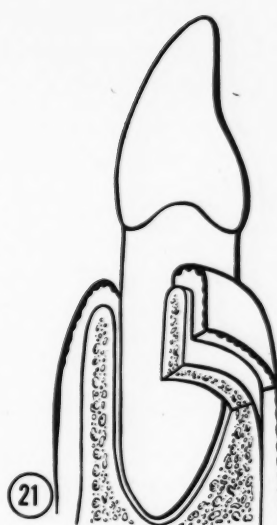
19. Application of considerable postsurgical pressure and stimulation to the area of surgery with a rubber tip.



20. Regular and repeated postsurgi-

cal use of scalers and polishing agents on the tooth.

21. The area following surgery. Note the absence of pockets and presence



of normal contour in a more apical position. Constant vigilance and care by both dentist and patient should maintain these results.

(5) Failure to present a smooth facial and lingual surface (irritation and pain to mucosa or tongue)

(6) Failure to reduce bulk (dislodgment, unsightliness, and pain)

(7) Failure to issue postsurgical directions

Postsurgical Directions to Patient

—(1) Do not masticate on the area that has been operated upon.

(2) Do not brush the raw area.

(3) Report immediately if the dressing falls or breaks off. If this loss of dressing occurs at an inconvenient time, keep the area covered with some substitute such as chewing gum until a new dressing can be properly placed as soon as possible thereafter.

(4) Report immediately if muscular impingement (ulcer) develops.

(5) Report immediately if undue pain develops and/or persists.

(6) Report immediately if the regional lymphatic tissues become involved.

(7) Report immediately if hemorrhage persists or develops.

(8) Report for change of dressing in 2 to 7 days. Early change of dressing is advisable.

(9) Postsurgical analgesic is seldom required.

Changes and Removal of Postsurgical Dressings, Figures 17, 18, 19, and 20—

(1) Analgesic (xylocaine ointment) is not usually indicated after the fifth day if reasonable care is observed.

(2) Remove the dressing with curettes by breaking away facially and lingually.

(3) Clear the interproximal spaces with a curette or scaler (Fig. 17).

(4) Irrigate the area with warm water.

(5) Examine the area for bulbous overgranulations (Fig. 18).

(6) If overgranulated, isolate and dry the area, apply 20 per cent trichloroacetic acid, leave 10 to 20 seconds, flush off with water. Use water carefully (Fig. 18).

(7) Continue scaling at the time of change or removal of each dressing (Fig. 20).

(8) Dry the area and insert the new dressing as previously directed.

(9) The dressings should cover the area, with two to three changes, for 14 days in the average case.

(10) At the time of removal of the last dressing, the patient is given express instructions on home care. Emphasis is placed on the considerable

amount of time, care, and pressure needed to prevent tissue from "billowing up" to its former undesirable position (Figs. 19 and 20).

Later Care—(1) The patient should always be observed not more than four to five weeks after surgery when "final" scaling and polishing should be undertaken (Fig. 20). *Recheck home care as well.*

(2) If the newly exposed tooth surface is sensitive, observe it for a reasonable period as sensitivity is often transitory. If there is no improvement, use a desensitizing agent (burnished NaF paste, glycerine, or warm olive oil), a desensitizing dentifrice, or a desensitizing mouthwash.

(3) The first of regular frequent recall visits should be not more than three months following completion of all surgery; later recalls should be not more than six months apart.

(4) A gingivectomy is only as successful as the postsurgical care by the dentist and by the patient (Fig. 21).

Summary and Conclusion

Five points of summary are the following:

1. There has been an attempt to outline and to illustrate only one technique in the field of periodontal

surgery (step-by-step gingivectomy).

2. There has been an attempt to convey the impression that this gingivectomy may be performed with a modest armamentarium early as well as late in the treatment plan of any enlightened general practitioner and that it is *not* a mystical, heroic, final act of desperation belonging only in the therapeutic sphere of the specialist.

3. The belief is expressed that

many failures in periodontal surgery are due, not so much to inadequate instrumentation or to inadequate surgical technique but to postsurgical inadequacies on the part of the dentist in not promptly prescribing home care measures or, on the part of the patient, in not properly and promptly executing these measures.

4. It has been suggested that all patients are not equally good candidates for periodontal surgery and that

the time spent in selecting suitable surgical patients saves mutual misunderstanding, embarrassment, and discouragement later.

5. The author does not claim originality for this particular technique. Unquestionably, the technique has been known and practiced for many years in many offices.

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School of Dentistry
University of Washington*

Correction

IN THE abstract of the article, "Local Effects of Certain Medicaments on the Teeth," by P. M. C. James and G. J. Parfitt, on page 140 and 141 in the March issue some of the abbreviations have been misinterpreted. As they were presented in the article which originally appeared in the *British Medical Journal* No. 4848: 1252-1253 (December 5) 1953, they were as follows:

On page 140 in the last paragraph, line 10 should read "Syr. ferr. phosph. co. caused the most damage

	Diluted to 50 per cent	
	Undiluted	with water
	pH	pH
Syr. ferr. phosph. co.	1.5	1.9
Mist. ferr. sulph. pro infant., <i>N.F.</i>	1.67	2.28
Elix. ferr. glucon., <i>R.F.H.</i>	3.52	3.8
Mist. ferr. et ammon. cit., <i>N.F.</i>	6.66	7.7
"Colliron"	8.56	8.87

...," and line 14 should read "Mist. ferr. sulph. produced severe etching ...". On page 141 line 4 should read "Elix. ferr. glucon. produced slight

etching ...," and line 8 should read, "in mist. ferr. et ammon. cit. or colliron."

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Nutrition

WHEN WE learn to eat day after day, month after month, year after year all the essential nutrients, a higher degree of health will result, there will be a marked decrease in the degenerative diseases, and a prolonged, healthy life span will follow. Progress of the science of nutrition and growing knowledge of vitamins, minerals, and enzymes

places the physician in possession of facts that enable him to prevent and control the ever-increasing danger of degenerative diseases. Food intake should be based on what materials the body needs for its health and efficient function rather than on present-day perverted taste habits. The diet should be low in carbohydrate, low in fat,

high in proteins, and high in foods that contain natural vitamins and minerals, such as whole grain products in the form of bread and cereal, fruit and fresh vegetables, and the intake of refined foods and sugars must be restricted or eliminated.

From *Journal of the American Medical Association* 155:1389 (Aug. 14) 1954.

CAST ALUMINUM

in Full Mouth Reconstruction

M. I. TENDRICH, D.D.S., Miami

DIGEST

This article gives step-by-step instructions for completing a full mouth reconstruction technique which employs the use of cast aluminum. Each step in the procedure is fully illustrated.

Problems in Mouth Reconstruction

To obtain and restore normal vertical dimension is one of the most difficult and critical phases of prosthetic rehabilitation. Some of the factors involved are (1) the existing height of the remaining teeth, (2) facial measurements, (3) x-rays, (4) photographs, and (5) speaking vertical.

Techniques Employed—(1) Many reconstruction techniques employ the use of an acrylic splint which is worn by the patient temporarily. (2) In other techniques the restorations are completed and the final gold case is inserted in the mouth.

Undesirable Factors: In the first procedure the following difficulties may be encountered:

1. The possible reduction of vertical dimension due to attrition and wear upon the acrylic material produced by bruxism, habit patterns, and clenching of the teeth.
2. Gingival irritation and sensitivity around the abutment teeth due to

improperly finished margins of the splint.

3. The ever-present danger of breakage of the splint.

Possible Reduction of Vertical Dimension: The undesirable factors in the first procedure are not present in the second procedure but the necessity of extensive occlusal equilibration and possible reduction of vertical dimension may be encountered if any discrepancy exists between centric relation and centric occlusion. This can materially alter the success of the technique.

Use of Low Fusing Metal—Amsterdam¹ avoids the problem of vertical dimension by fabricating the case in low fusing metal. The case is inserted in the mouth where all occlusal discrepancies can be detected and corrected. The case can then be remounted and duplicated in gold. The disadvantage in this technique is that low fusing metal is heavy and bulky and cannot be worn with ease and comfort by the patient outside the office.

Modified Technique

Experimentation with the use of aluminum² was decided upon to enhance the Amsterdam approach to the

¹Amsterdam, Morton: Personal Communication.

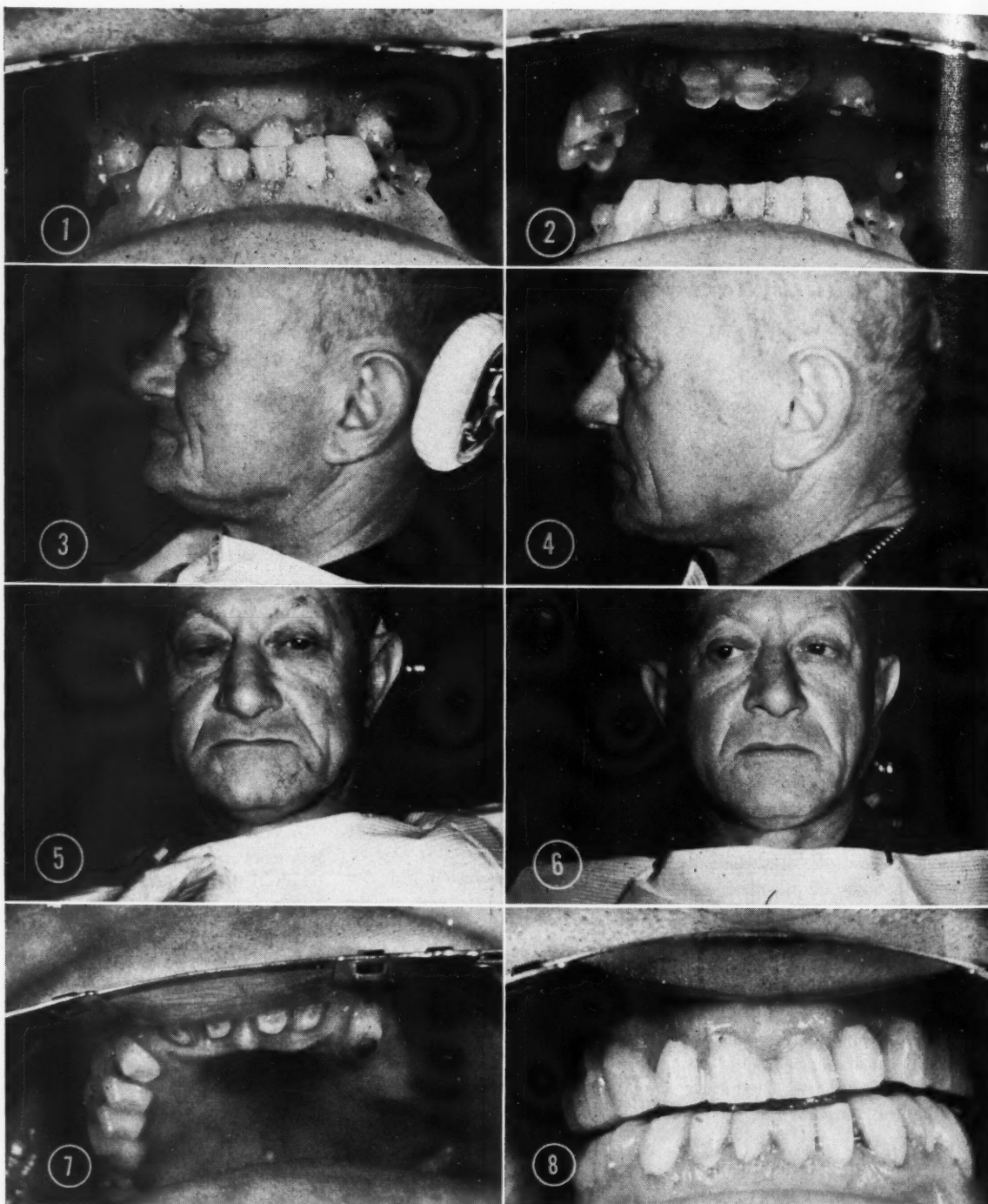
²Aluminum Alloy D-214, Alcoa Building, Pittsburgh, Pennsylvania.

problem of establishing vertical dimension, centric relation, and satisfying the esthetic requirements. The use of this material provided all the desirable properties and in addition the following advantages:

1. Greater stability, greater strength, and less weight.
2. Occlusal discrepancies can be constantly checked and proper function maintained.
3. Closely adapted margins preclude the possibility of gingival irritation.
4. If periodontal disease is present, treatment can be instituted at any phase of the procedure without altering the splints.
5. Greater durability of material makes longer wear possible.
6. Occlusal aluminum splints may be cast and worn by the patient before any preparations are made on the teeth.

Operative Procedure

1. Prepare all abutment teeth.
2. Take copper band impressions of all teeth.
3. Alginate impressions are taken of both arches for insertion of copper dies.
4. Gold copings are cast and fitted to the abutment teeth.
5. Final plaster impressions are taken with the copings in place.
6. A face-bow transfer is adjusted to the hinge axis points on the face. This is carried to an adjustable artic-



1. Before treatment.
2. Before treatment.
3. Before treatment.
4. After insertion of aluminum splints.

5. Before treatment.
6. After insertion of aluminum splints.
7. Upper preparations.
8. Upper and lower acrylic temporary splints in mouth.

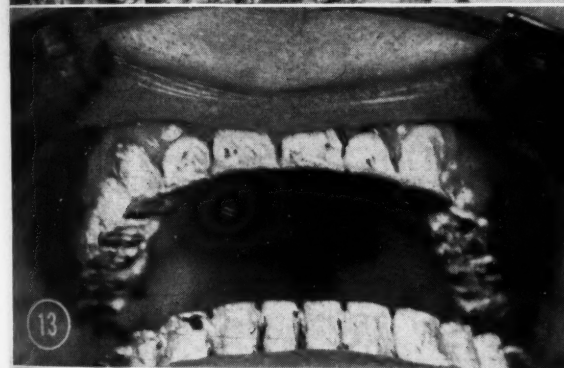
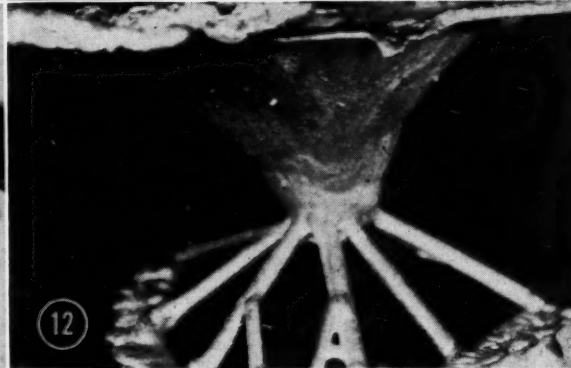
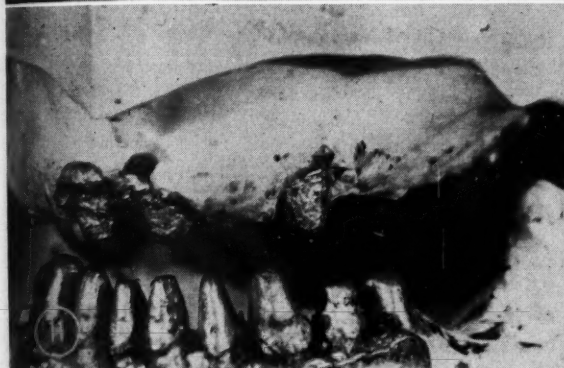
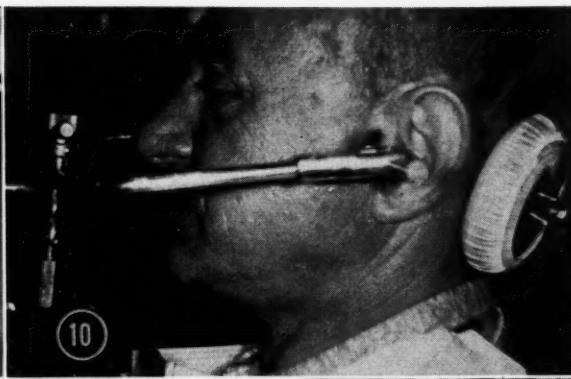
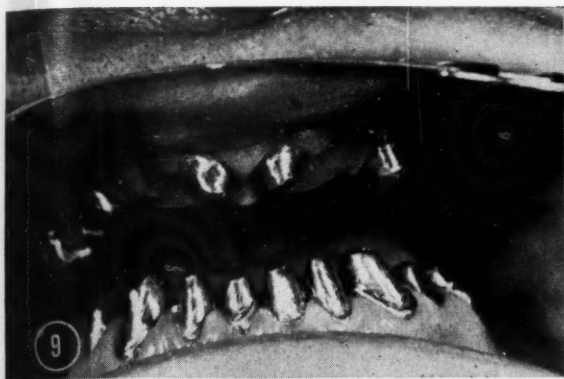
ulator in its correct relationship.

7. The lower cast is then oriented and mounted to the upper cast by the use of a centric bite.

8. Full arch splints may now be prepared and cast in aluminum alloy. For the esthetic effect, they may be veneered with quick cure acrylic. The

splints can be worn with ease and comfort. The results have been more than satisfactory.

1601 S. W. 22nd Avenue



9. Gold transfer copings in mouth.

10. Face-bow transfer.

11. Case mounted on an adjustable articulator.

12. Complete aluminum splint cast at one time.

13. Upper and lower cast aluminum splints in mouth.

14. Upper and lower aluminum splints in mouth using quick cure acrylic.

15. Before treatment.

16. After insertion of aluminum splints.

HEMISECTION of a Lower Molar:

A Case Report

H. H. PEARSON, D.D.S., Montreal

DIGEST

This case history demonstrates the value of ultraconservative treatment. Ordinarily the tooth in question would have been extracted. Using the method illustrated in this article, the author utilized half a lower molar in placing a successful restoration.

History

The patient, a woman over 50 years of age, had a better than average dentition; only the upper right second molar and lower left second molar were missing. All other teeth were in good condition and repair with the exception of the lower left first molar. The patient complained of pain from heat, cold, and sweets.

Results of Examination

On examination the lower left first molar showed the following conditions:

1. The distal root was denuded of its covering by more than half its length.
2. Due to the absence of the second molar, the resultant recession and traumatic occlusion produced a periodontal lesion that extended to the bifurcation.
3. The exposed surface of the root showed signs of erosion and possible caries.

Under ordinary circumstances this tooth would be condemned to extraction. The patient in this case, however, agreed to accept any conservative treatment that would be prescribed as an alternative.

Description of Treatment

The treatment suggested, accepted by the patient, and completed is illustrated in the following roentgenograms.

Figure One—This is the roentgenogram that was used in the diagnosis. Heat, cold, electricity, and percussion showed the pulp to be vital.

Figure Two—Pulpectomy was performed on all three roots and the two anterior canals were filled 1 millimeter short of the apexes in accordance with currently accepted principles of endodontics.

Figure Three—The crown was sectioned longitudinally in a line with the bifurcation of the roots and the distal portion of the whole tooth was removed. A temporary aluminum shell crown was cemented to place with zinc oxide-eugenol cement.

Figure Four—After primary healing of the socket a cast gold crown

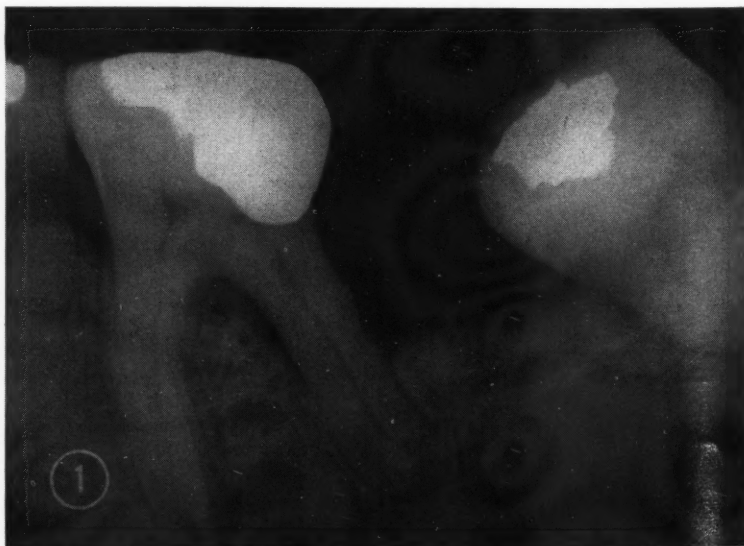
with an acrylic facing was used to cover and restore the remaining portion of this molar. This crown contains the female portion of a precision attachment on its distoocclusal aspect.

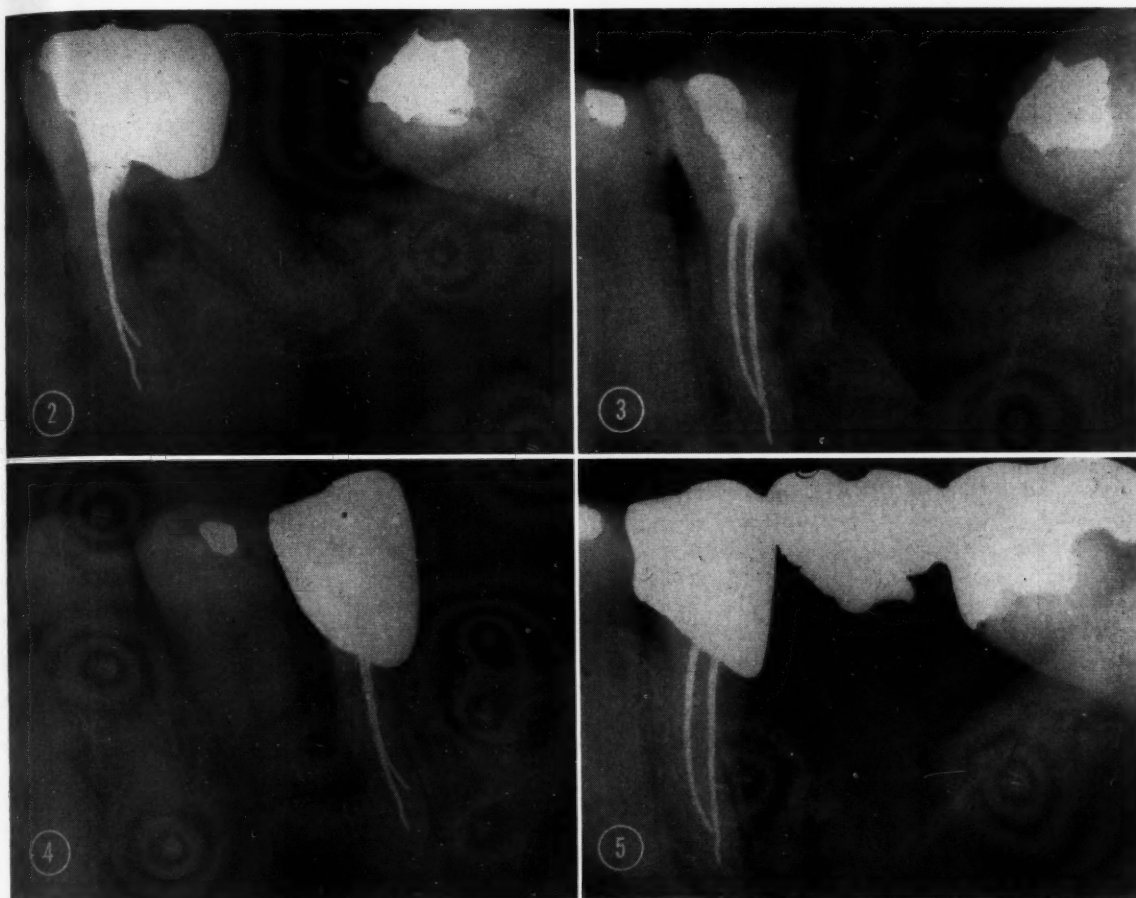
Figure Five—A period of six months was allowed for the healing of the hard and soft tissues; a fixed bridge was made to restore the space. The bridge was completed with the male portion of the precision attachment fitting into the already cemented crown covering the pseudo bicuspid.

Summary

By utilizing half of a molar, a restoration was placed which would receive less stress on the third molar abutment than would prevail from a longer span. The curve of the remaining roots will withstand thrusts directed from the distal better than a straight second bicuspid. Most important of all the conservative features, the second bicuspid remains undisturbed.

500 New Birks Building.





Dental Caries and Diet

WITH THE large amount of publicity given to the relationship of fluorine in drinking water and the prevention of caries, the much more important relationship of diet and caries is apt to be overlooked. A recent report in Australia serves as a reminder that the real solution of the problem of preventing dental caries is dietetic. Workers from the Institute of Dental Research studied a group of 81 children of European stock of both sexes, living a supervised institutional life. The majority of these children, whose age at the time of examination ranged from four to nine years, had been living in the institution since the earliest months of life. The diet of the children consisted mainly of wholemeal bread, wholemeal biscuit, wholemeal por-

ridge, wheat germ, fruits (fresh and dried), vegetables (cooked and raw), butter, cheese, eggs, milk and fruit juices and practically no meat. This was supplemented with vitamin concentrates, honey or molasses as a sweetening agent on occasion, and nuts. Such items as sugar (white and brown), white flour products and tea, were absent from the diet. As far as possible, food was taken uncooked and/or with a minimum of preparation. An examination of the water supply showed that no fluoride was present. The teeth were examined by mirror and probe supplemented with radiographic examination. It was found that 63 of the group of 81 children were entirely free from dental caries, compared with 4 per cent free of caries in a Sydney

group on an uncontrolled diet. The average number of decayed, missing and filled teeth per child was 9.57 for the Sydney group and 0.58 for the controlled diet group (immunity increased approximately twentyfold). This lessening of the caries incidence to 1/20 of that of another Australian group used for comparison is in marked contrast to the results of fluoridation of water supplies which in the United States appears to reduce caries to about 1/3 of its normal incidence.

From *Child Health: Diet and Dental Caries*, Department of Health, Canberra, Australia, reprinted in *Journal of the American Medical Association* 154:389 (Jan. 30) 1954.

HIGH SPEED

in Amalgam Cavity Preparation

HAROLD C. KILPATRICK, D.D.S., Yonkers, New York

DIGEST

The use of high speed instruments enables the dentist to save time and, therefore, money because of the increased number of patients he can treat. With the high speed engine vibration is reduced and when properly used, there is no injury to the pulp or other tissues. This illustrated article describes the procedures for use of these instruments, their care, and methods for preventing the generation of excessive heat during use.

Types of High Speed Instruments

As used in present day dentistry, high speed is one of the most useful procedures since the invention of the electric dental engine.¹ The high speed instrument can be compared to the jet aircraft engine; it does the work faster, with less vibration and with less fatigue to the operator and patient.

Turbine Engine Described—Nelson² describes a turbine engine and handpiece, which attains more than 60,000 r.p.m. Undoubtedly this instrument may be developed to be of use in the future when its many problems are solved. It is difficult to use this engine when considerable power is needed at the handpiece, such as cutting through metals and other restoration materials. Carbide burs of special design must also be used with this instrument. The diamond

seems to offer the best cutting edge.

Ultrasonic Vibrating Handpiece—Oman³ discusses the ultrasonic vibrating handpiece which also shows promise but which has many imperfections to overcome. With this instrument the abrasive powder which actually does the cutting is difficult to apply without obstructing the field of vision. It is hard to conceive how this instrument will cut soft caries. The possibility of damage to the periodontal membrane, the pulp, and other oral structures by vibration must also be considered.

Procedures to Increase Speed

With small cost and slight additional training, the dentist can avail himself immediately of the many benefits of high speed.

Average Speed—The average dental engine, in a test made of fifty dental engines in use by practitioners, averaged 6,000 r.p.m. at top speed. Many of the older engine's top speed was 3,500 r.p.m.

Rate of High Speed—As used today, high speed utilizes speeds of 18,000 to 28,000 r.p.m. To attain these speeds the following procedures may be followed:

1. By completely cleaning and oiling the pulley felts and the handpiece, and cleaning the motor armature, many motors can be stepped up an average of 2,000 r.p.m.

2. By applying one of the high speed pulley transmissions with a high speed handpiece the speed can be increased 100 per cent to 150 per

cent which brings the r.p.m. to 16,000.

3. By shunting out the motor resistors an additional 4,000 r.p.m. can be gained which makes the available speed 20,000 r.p.m.

4. Higher speeds are attainable by having the motor armature rewired. Some of the new units come equipped with 12,000 r.p.m. engines which allow a higher base speed.

5. By changing the slack in the engine belt a change of 1,000 to 2,000 r.p.m. is noted but the transmitted power is sometimes reduced beyond practical limits.⁴ A certain slack is desirable in order to have belt slippage in case of a disc jamming. By running the belt through a stick of wax or a cake of fiddler's resin, belt slippage may be reduced. Too much slack causes pulley jumping.

Cooling Methods

The use of air and water coolants cannot be too strongly emphasized. Experience has shown that all rotating cutting tools at any speed should be cooled in some manner. There are several devices on the market which supply automatic air and water to the cutting tool.

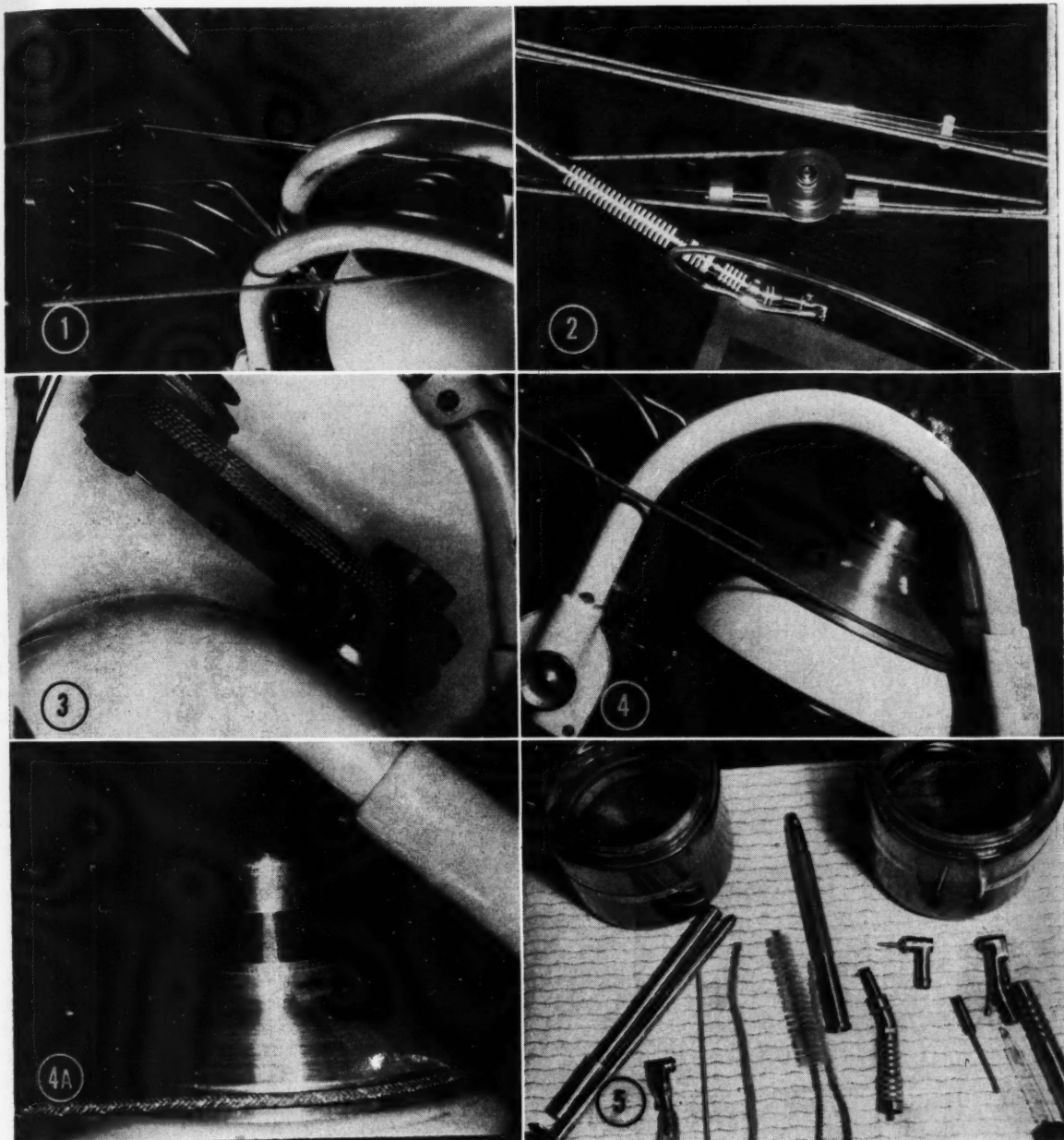
Fog or Mist Preferred—That the atomized spray gave a more rapid and a steadier cooling effect than the solid stream of water was determined by heat tests taken directly on the heads of the contra-angles. Some angles have a built-in coolant tube with such a fine bore that a mist of fog is produced which does not cloud up the mirror as much as droplets of water. It has been determined that far more heat control from a fog or mist

¹McEwen, R. A.: Accelerated Handpiece Speeds in Restorative Dentistry, New York D. J. 20:250 (July) 1954.

²Nelson, R. J., et al.: Hydraulic Turbine Contra-Angle Handpiece, JADA 47:324 (Sept.) 1953.

³Oman, Carl, and Applebaum, E.: Ultrasonic Cavity Preparation, New York D. J. 20:256 (July) 1954.

⁴Ingraham, Rex, and Tanner, H. M.: The Adaptation of Modern Instruments and Increased Operating Speeds to Restorative Procedures, JADA 47:311 (Sept.) 1953.



1. "A" type of high speed transmission. Note spreader pulley arms to keep the belt from hitting the Ritter engine arm.

2. "B" type of high speed pulley.

3. "C" type of high speed transmission.

4. "D" type of high speed pulley.

4A. Star high speed pulley. This is similar to the superdentic except that it does not provide an idler pulley offset and restricts the engine arm more.

5. Cleaning assembly for all contra-angles and friction type straight handpieces to be used every three hours of operating time

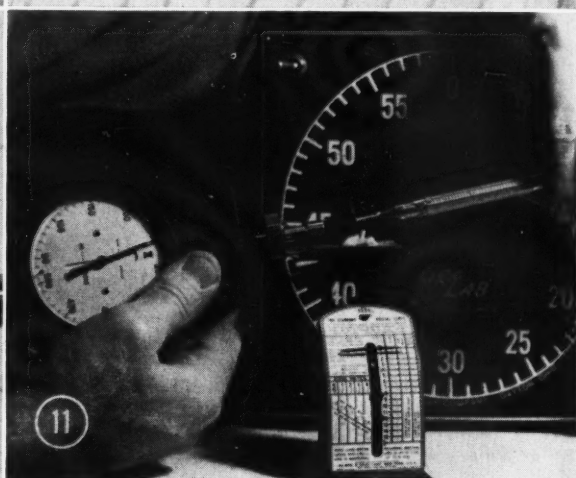
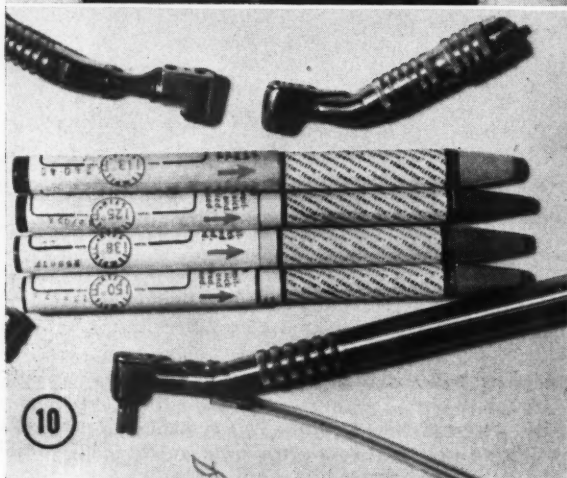
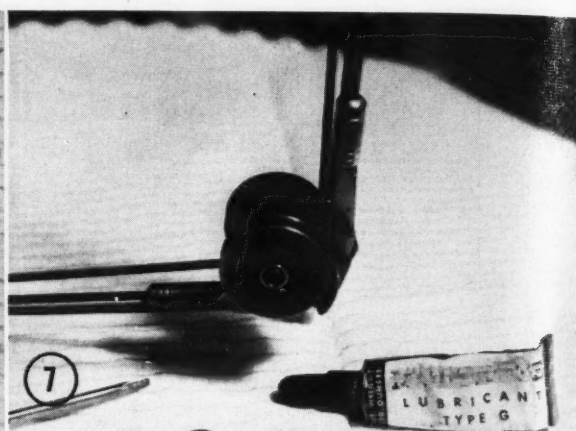
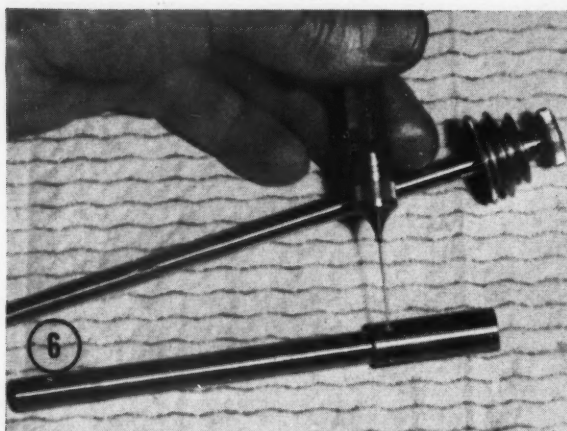
is produced from a smaller amount of water than when unatomized water is used.⁵

Constant Removal Necessary with

⁵Kearney, Paul: They Stop Fires by Remote Control. Reader's Digest (April) 1954.

Water Spray—When water is sprayed on by an assistant using the water syringe, so much water is needed that it involves a suction apparatus for constant removal. The assistant must also be alert to keep the spray on the

contra-angle, its cutting instrument, and the tooth in rapid sequence. By having the cooling tube built into or clipped onto the contra-angle much of this is taken care of by the atomized mist.



6. Two drops of oil from hypo oiler is usually sufficient for three hours of operating. More oil causes heating. This applies to the straight handpiece only as the angles need frequent heavy lubricating.

7. Pulley felts must be thoroughly lubricated periodically.

8. Resistors in the back of the unit may be shunted out for an additional 4000 r.p.m.

9. The angle on the right has a soldered tubing which gives the angles more cooling and does not press into the fingers

as much as the clip-on type which is shown on the left.

10. Tempil heat sticks used for determining the amount of heat generated in the various parts of the handpieces when under load.

11. Equipment in use showing load measurement by means of letter scale. Tachometer at right reads 26,000 r.p.m. The heat sticks give the range of the heating parts of the equipment which in some instances builds up rapidly. The timer was set for two-minute intervals.

Care of High Speed Instruments

All high speed and regular handpieces and angles must be kept in an extremely clean and well-oiled condition. The presence of any grit, lint, or other dirt can cause rapid heating and early degeneration of the equipment. Most high speed contra-angles should be cleaned after every three hours of use and high speed handpieces should be cleaned daily.

Method—Cleaning must be done by completely breaking down all the parts and using the cleaners and lubricants suggested by the manufacturers. Oil sterilizers cause gumming of the high speed angles.

Effect of High Speed Lubricants—It was noted that non-high speed angles when given the usual care of cleaning and lubricating with heavy grease and oils, and using oil sterilizers, ran quite hot at speeds above 10,000 r.p.m. When they were cleaned and lubricated with high speed lubricants many of these angles could be used with coolants at speeds of 18,000 r.p.m. for bursts of thirty seconds when used on a high speed straight handpiece and with a four-ounce touch.

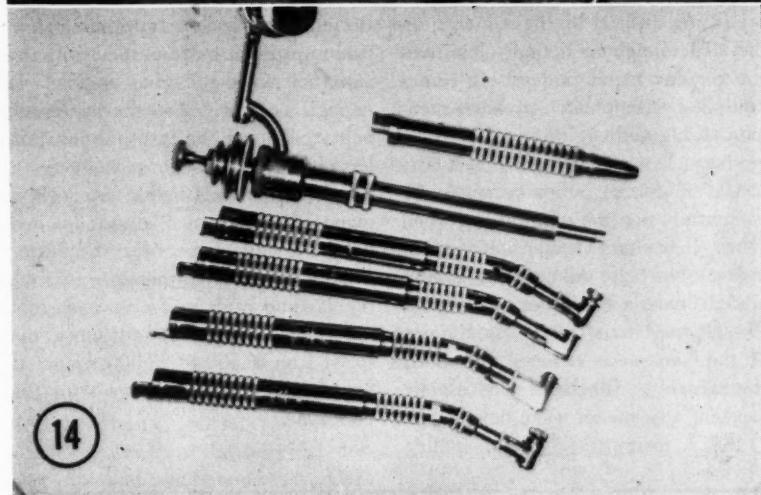
Tests to Determine Degree of Heat

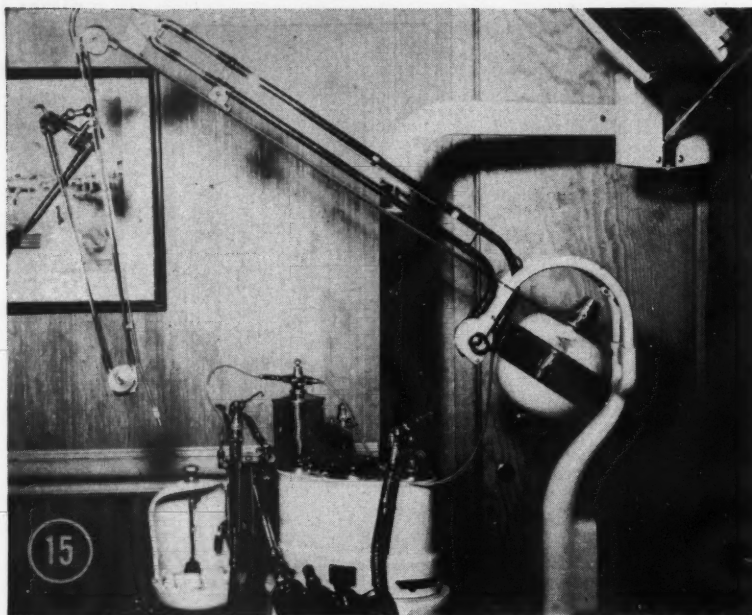
Tests were made on five different makes of handpieces to determine how much heat was developed on the shank of the cutting instrument when run at high speeds.

12. *Imperator group showing special chuck spindle and bearing for each stone and bur. The handpieces also accommodate latch type cutting instruments.*

13. *Two types of friction-bearing high speed handpieces, one ball-bearing type. The latter type seemed to need less care than the two former ones but seemed to become noisier as the bearings flattened out.*

14. *Another ball-bearing type straight hand-piece with special long sleeve vibration reducing angles.*





15. Superdonic setup showing the top idler pulleys offset to keep the belt in line with the large bonnet type pulley. The idler pulleys are also ball-bearing to reduce noise and amount of care required.

Type of Belt	High Speed	Pully r.p.m. Increase	Noise	Vibra- tion	Ease of Ad- justment	Engine Wear	Belt Wear	Belt Slippage
Regular	A	150 per cent	Med.	Low	Excellent	Min.	Min.	Slight
Special	B	125 per cent	Med.	Med.	Poor	Min.	High	High
Special	C	100 per cent	High	High	Poor	Max.	High	Slight
Special	D	225 per cent	Med.	Med.	Excellent	Min.	Min.	Slight

(A) a light formica two-speed pulley fitting directly on the engine spindle. The weight is actually less than the regular metal pulleys. It comes equipped with pulley spreaders, tension spring and engine stop for Ritter engines. It uses the regular belt.

(B) A double pulley arrangement connected on the forward engine arms. It has two special belts which, unless the belt unions are evenly united, make a continuous vibration. The slightest twist in the wrist joint of the handpiece reduces the speed considerably. The belts need almost constant adjustment when new.

(C) A heavy metal double pulley

overdrive transmission which fits over the engine spindle. It exerts a continuous pressure from the transmission belt to the engine spindle. If enough slack is put on the handpiece belt it slips off the transmission pulley. It also uses a special belt.

(D) The largest pulley tested. It is made of lathe-turned aluminum and fits in a cup shape over the Ritter Type C engine. It has two speeds, regular and high, and uses a ten-foot synchro-mesh belt. It advances the speed from 6,500 to 28,000 r.p.m. It has slightly more slippage than the (A) type.

Method Used—1. All tests were completed under a two-ounce load.

2. The amount of heat was recorded at various speeds using air alone, and air and water as coolants.

3. It was felt that any heat over 114° would be injurious to pulp cells and might cause death of pulp tissue.⁶

4. Heat measurements were made by putting four Tempil heat stick marks from 113° to 150° on the head of the angles.

5. Comparative tests were run with an Alnor surface temperature thermometer.

Heat Generated in High Speed Handpieces—1. All the high speed handpieces generated some heat from 28,000 to 32,000 r.p.m. even with coolants but some of the instruments did not reach this point until the full two-minute period.

2. Up to one and one-half minutes the generated heat was below 114°.

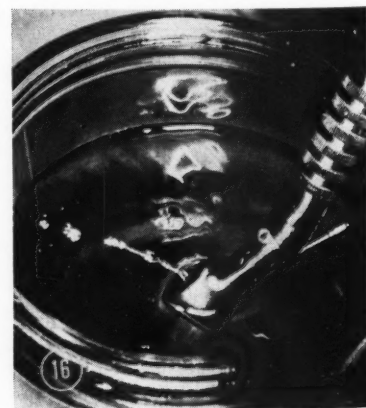
3. Up to 26,000 r.p.m. all well-serviced high speed handpieces operated within a tolerant heat limit.

4. The friction type of bearing had a tendency to generate more heat than the ball-bearing or dog-drive instruments.

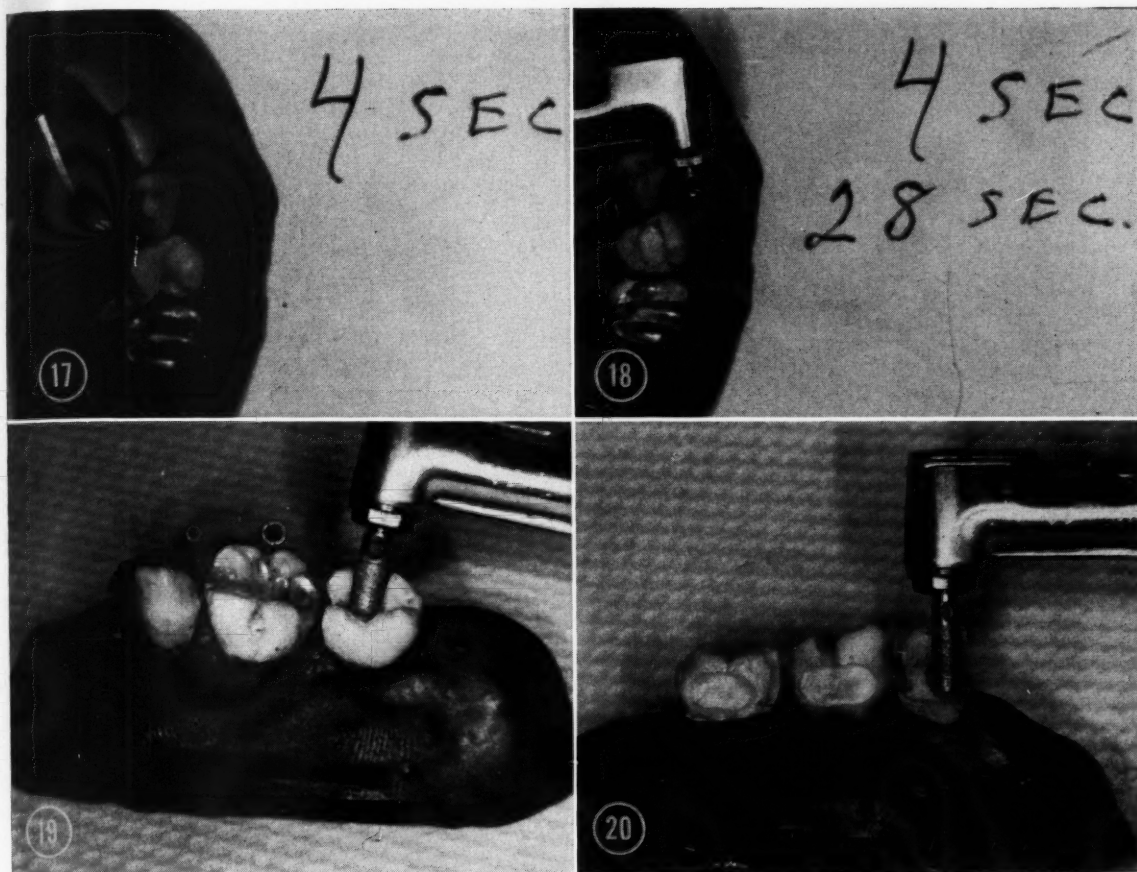
5. The ball-bearing type had a tendency to be more noisy and cause more vibration due to flattening of the bearings.

6. Regular Doriot handpieces did

⁶Arnim, Sumter; Smith, Russell K.; and Porter, Lon F.: Cavity Preparation with and Without Airbrasive, *DENTAL DIGEST* 60:388-395 (Sept.) 1954.



16. At high speeds, the contra-angles suck in liquids in large quantities. They must be cleaned and heavily oiled at frequent intervals.



17. Disc making interproximal cuts in 4 seconds at 22,000 r.p.m.

18. Interproximal cuts and occlusal step made in 32 seconds at 22,000 r.p.m.

19. Hollow core stone started at an angle in first occlusal cut: 22,000 r.p.m.

20. Hollow core used in making the axial wall: 20,000 r.p.m.

not overheat until pressed beyond 14,000 r.p.m.

High Speed Angles—These instruments could not be run at speeds as great as the straight handpieces. As 75 per cent of cavity preparations is done with the angle attachment it is hoped that a better high speed angle can be produced. The 18,000 r.p.m. speed was about the highest a high speed angle could be run for continuous work, although some could be used at 22,000 for 30-second bursts. It is emphasized that the temperature readings could be changed by many factors and that by using quite cold water as a coolant some angles could be run for greater periods of time.

Defects Encountered — Over one hundred angles and handpieces were tested and it was found that occasion-

ally even a brand new handpiece had to be taken down and thoroughly cleaned and oiled several times before a test was run with accuracy because the factory lubricant was too heavy. A few never ceased to heat up even at speeds of 6,000 r.p.m. These showed mechanical defects and were returned to the manufacturers. If a handpiece continues to heat up after cleaning, it should be cleaned and lubricated again.

How to Use High Speed

The following are some of the factors involved in the use of high speed:

1. The operator must always bear in mind the fact that a *light touch* is of the highest importance. One to two-ounce pressure is sufficient for most diamond points and discs. Car-

bide burs work better at about an eight-ounce pressure.

2. Peyton and Henry⁷ point out that the design of burs is important and that there is considerable variance in cutting ability of even new burs of the same size and make. For this reason a good cutting bur is a necessity and the diamond point is suitable.

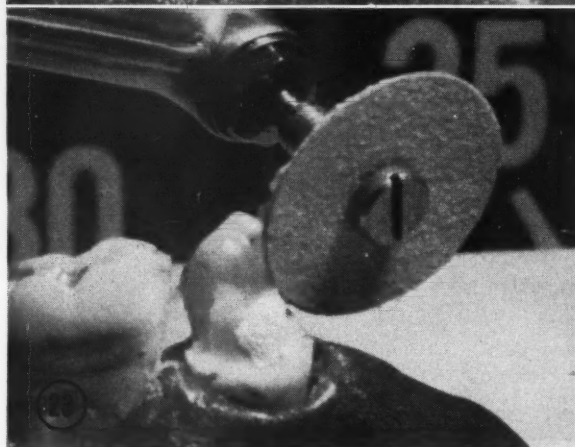
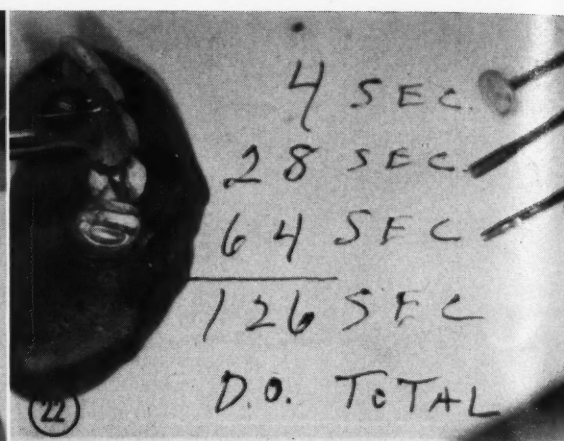
3. Unfortunately, most of the stones in use today have too rough a grit because they are made to be used at slow speeds. At high speeds the diamond point must be made of an extremely fine grit. It must be mounted strictly on center.

4. Diamonds should be purchased

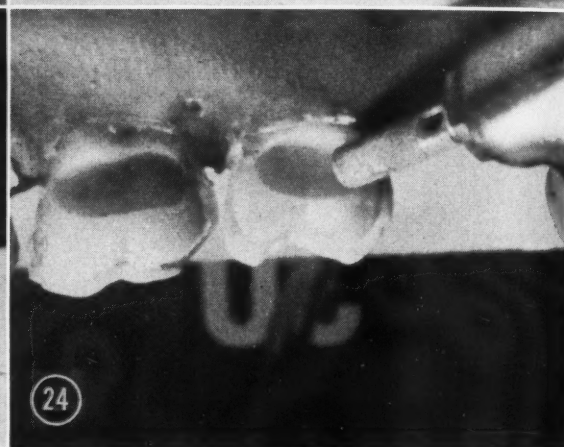
⁷Henry, E. E., and Peyton, F. A.: The Relationship Between Design and Cutting Efficiency of Dental Burs, *J. Dent. Res.* **33**:281 (April) 1954.



21. Removal of pulpal decay is expediently done with a large round bur at 500 r.p.m using air alone through the cooling apparatus.



23. Smoothing and finishing can be rapidly accomplished with fine cuttle discs at 15,000 r.p.m. At slow speeds these discs jam and bind.



24. Hollow core stone does the Class V preparation in an average of 45 seconds at 20,000 r.p.m.

for quality and not for a low price consideration. Good points outlast cheaper ones many times. New stones should be tested and returned for replacement if found defective. The diamond point also has the ability to be used over and over again.

5. Peyton and Henry⁸ state that the average life of a steel bur cutting hard material is five minutes and the carbide bur fifteen minutes. Rough stones are for low speed only, fine uniform grit is required for high speed.

Versatility of Diamond Stone Instruments—The hollow core diamond stone is particularly desirable to complete all types of cavity preparations.

⁸Op. cit., The Effect of High Speed Burs, Diamond Instruments and Airbrasive in Cutting Bony Tissue, JADA 49:437 (Oct.) 1954.

Virtually 90 per cent of the preparation can be done with different size hollow core instruments. This type of diamond cuts similarly to the drill used for oil-well drilling with the following results:

1. It allows the cut debris to flush out of the top hole in the core and allows the spray to flush and cool from the center as well as the sides.
2. It cuts on the bottom, the side, and in the core hole.
3. It can be used so it leaves a small spine of tooth structure for retention, which also steadies the stone when in use.
4. It can be used for all classes of cavities.

Light Pressure Used—Using the diamond points at high speed with a

light touch can be compared to feeding a board to a whirring circular saw: the wood is cut much faster if it is fed to the saw just fast enough for the teeth of the saw to cut the wood and not cause the blade to push against the pressure of the pushing force also. The tooth structure seems to melt away with a light touch. Removal of most carious material is still accomplished better with a round bur.

Method in Proximal Cavities—

1. The outline form is established first with a small safe-sided diamond disc.
2. The instrument is started first at high speed and the safe-side placed against the adjoining tooth.
3. The first cut is made toward the center of the tooth and then rotated

so that a wedge of enamel is cut out buccally; the same process is repeated lingually. The operator must always be conscious of the high pitch of the high speed; when the whine goes down it is an indication of too much pressure.

4. Resistance and retention form is established with the hollow core stones at high speed; removal of caries with low speed and a round bur. Planing and finishing may be done with hand instruments, but as used by the author, cuttle discs at medium speed take off the rough edges satisfactorily.

Care of Diamond Instruments—Diamond points should be cared for in a special manner:

1. Heat sterilization of any type must be avoided.

2. There are several detergent solutions on the market which soften organic matter and make cleaning much simpler.

3. Mild sand blasting with the abrasive or laboratory sand blasters

are especially effective procedures.

4. The hollow core stones may be cleaned of clogged amalgam by careful cutting with a small round steel bur.

5. Most cold sterilizing solutions cause corrosion; alcohol immersion seems to have the least ill effects.

Conclusions

Economic Advantage—High speed may be the means of maintaining the present level, or even reducing the cost of some dental services because preparations can be completed in one-half to one-fourth the time required with low speed.

Time Saved—At an Army test in Fort Belvoir, Virginia, two teams of ten dentists tested high speed, preparing more than 2,080 cavities. Those using high speed saved over one minute per surface with the use of less anesthetics.⁹ This report also states that the entire Army dental service is

⁹Beebe, D. M.: Efficiency of High Operating Speeds with Water Lubrication in Cavity Preparation, JADA 49:653 (Dec.) 1954.

converting to high speed techniques.

Increased Income—High speed can increase the dentist's income by enabling him to perform more dental treatments rapidly, more satisfactorily, and with greater patient acceptance and less fatigue to himself.

Coolants Necessary—The use of coolants cannot be overemphasized as a high heat is generated in an extremely short time which can cause inflammation of the tooth pulp.

Improvement Suggested—It would be helpful if the equipment manufacturers would incorporate a tachometer on the engine belt. High speed is making such rapid advances that new equipment is now obtainable with higher basic speeds, a shunt switch, and built-in coolant devices.

Author's Note: Appreciation is expressed to the Chayes, Midwest, Kerr, and Densco Companies for their cooperation in the preparation of this article by lending instruments and testing equipment.

27-41 Ludlow Street.

Varieties of Headaches and their Mechanisms*

NINETY-FIVE per cent of headaches encountered by the physician arise from painful distention of certain branches of the external carotid artery and/or sustained contraction of ischemic muscle about the face, scalp and neck. Migraine headache, atypical facial neuralgias, recurrent post-traumatic headache, and most headaches associated with arterial hypertension are included in the categories of ex-

tracranial headache. Less commonly, headache is directly attributable to disease of the eyes, nose and paranasal sinuses, ears and teeth; and sensory ganglion, root or nerve disorders involving the face. Rarely, inflammation of cranial arteries is a source of headache—cranial arteritis. Intracranial pain-sensitive structures are sometimes also the source of headache. Space-occupying lesions (neoplasms, hemorrhage), inflammation of the meninges and distention of intra-

cranial arteries in certain instances of vascular headache of the migraine type, in hypoxic states, by nitrites and other chemical agents, and with fever sepsis and bacteremia are examples of such causes. Other intracranial headaches are associated with diminished cerebrospinal fluid volume which may follow lumbar puncture or pneumoencephalography.

From *Journal of the American Medical Association* 155:1565 (Aug. 28) 1954.

*The Medical Clinics of North America (May) 1954.

Body Chemistry, the Key to Health

O. Theron Clagett, M.D., surgeon of the Mayo Clinic, predicted to a group of surgeons at the Los Angeles County Hospital "that most radical operations will be eliminated by internists who study more body chemistry.

"If I were a young man," the

Mayo Foundation Professor of Surgery asserted, "I would not go in for surgery. The best thing now would be to get a college degree in chemistry before getting a medical degree."

The series, *Body Chemistry in Health and Disease*, by Melvin E.

Page and D. L. Brooks, published in DENTAL DIGEST from September, 1953 to June, 1954 is now available in book form from the Page Foundation. The address is 2810 First Street North, St. Petersburg 4, Florida. The price is \$3.00 a copy.

A Prosthetic Aid for FACIAL PARALYSIS

GEORGE BALBER, B.S., M.S., D.D.S., Miami

DIGEST

This article is a report of a case of facial paralysis (Bell's palsy) which occurred in a musician, a saxophonist. The acutely distressing symptoms always present in this condition were greatly heightened by the fact that the patient was denied the means of a livelihood as well. Step-by-step directions are illustrated for constructing the appliance that was made for this patient and that enabled him to continue his occupation as a saxophonist for the several months he was being treated.

Description

Facial paralysis or Bell's palsy is a paralysis of the seventh or facial nerve. It may be caused by (1) lesions of the cortex, (2) lesions of the nucleus itself, or (3) involvement of the nerve tract in its course within the pons and through the wall of the skull. In the peripheral facial paralysis all the branches of the nerve are involved. The face on the affected side is immobile and can neither be moved at will nor participate in any muscular movements.

Duration of Disease—Recovery may vary from a relatively short period of time to as long as a year, or there may be permanent paralysis.¹

Symptoms Acute—The symptoms of Bell's palsy are always distressing to the patient and become greatly aggravated when they interfere with the economic security of the patient.

Report of a Case

The patient in this case was a pro-

fessional musician, a saxophonist, who had been under medical treatment for four months when first seen in the dental office and was manifesting slight improvement. He was referred in the hope that some device might be contrived for him that would make it possible for him to resume his occupation.

Leakage of Air When Playing—On the patient's first visit he reported that he had observed that if he compressed the lips on the affected side (in this case the right) by placing two fingers on the upper and lower lips he was able to prevent the leakage of air from between the lips which occurred when he tried to play his instrument.

Means to Prevent Leakage Sought—The leakage from between the lips when attempting to play was caused by the inability of the flaccid musculature to contract around the mouthpiece of the instrument. The problem was to devise some mechanical means of preventing this air leakage so that the patient would have both hands free to finger the keys.

Appliance Constructed

After some experimentation an appliance was constructed in the following manner:

1. **Acrylic Splint Made**—A clear acrylic splint which covered all the teeth from the second molar to the cuspid on the right upper jaw was processed. This was made as thin as possible and extended gingivally beyond the heights of contour of the teeth so that it could be snapped into place.

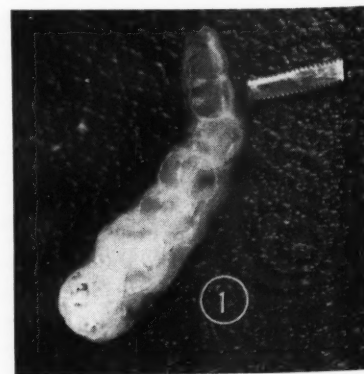
2. **Bolt Prepared for Insertion**—A regular machine bolt, 3/16 of an inch in diameter, and 1 1/2 inches in length was prepared for insertion into

the splint. This was done by removing the head and grinding the bolt flat on two sides. It thus became a flat piece of metal 3/16 of an inch in width, and about 1/16 of an inch in thickness with the threads remaining on the edges so that a nut could still function on the "bolt." About 3/8 of an inch from one end the bolt was bent to an angle of approximately 120°.

3. **Bolt Attached to Splint**—The splint was placed in position on the teeth and the bent end of the bolt was attached to the splint on the lingual surface by means of acrylic resin cement. The bolt was placed so that it was approximately perpendicular to the curvature of the face at that point and horizontal to the floor when the patient sat upright.

4. **Impression Taken**—With the splint in place an impression was made of the right side of the face. This was done in the following manner:

1. Alginate impression material was painted over the lower face to include the lips, chin, and most of the cheek. The patient held the mouth-



1. View looking downward into the tooth surface of the splint. Note that the attached bolt is flattened on its upper surface. It is also flattened on the lower surface.

¹McRae, Thomas, and Osler, William: The Principles and Practice of Medicine, ed. 2, New York, D. Appleton-Century Co., Inc., 1930, p. 1050.



2. View showing the splint with the attached bolt in place in the mouth.



3. View with the mouth closed showing the relation of the bolt to lips.

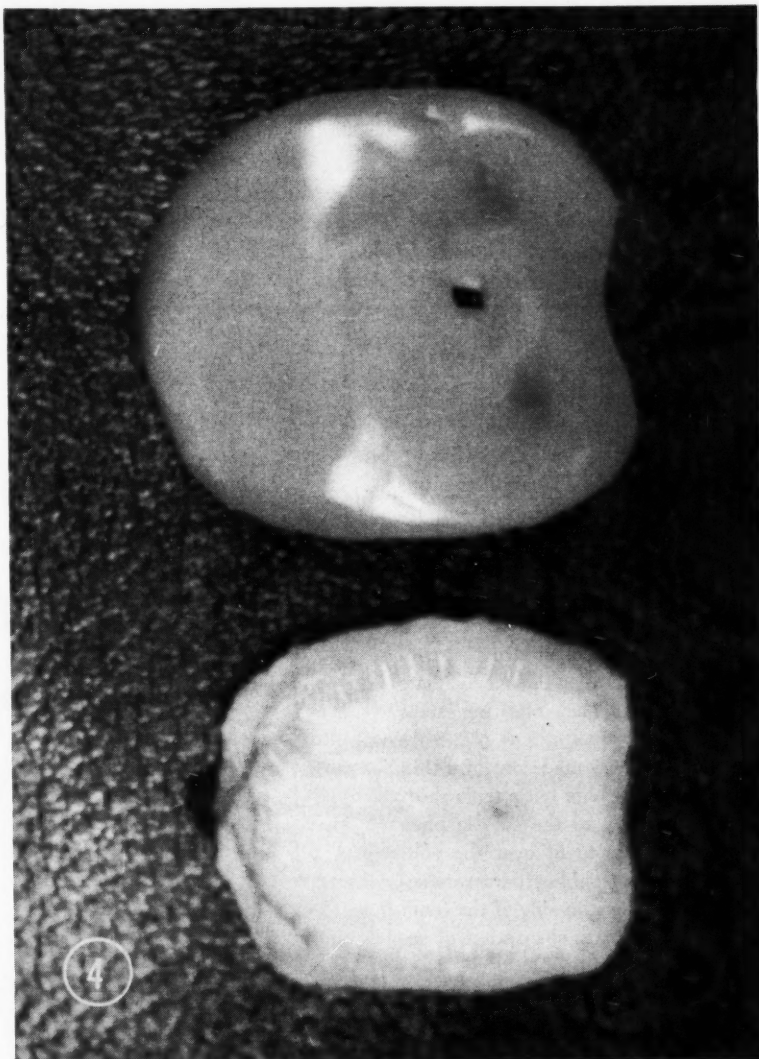
piece of the instrument in his mouth in the usual position to indicate the limit of the impression medially.

2. Immediately after the alginate was applied, 2 by 2-inch gauze sponges which had been opened up were embedded into the surface of the alginate.

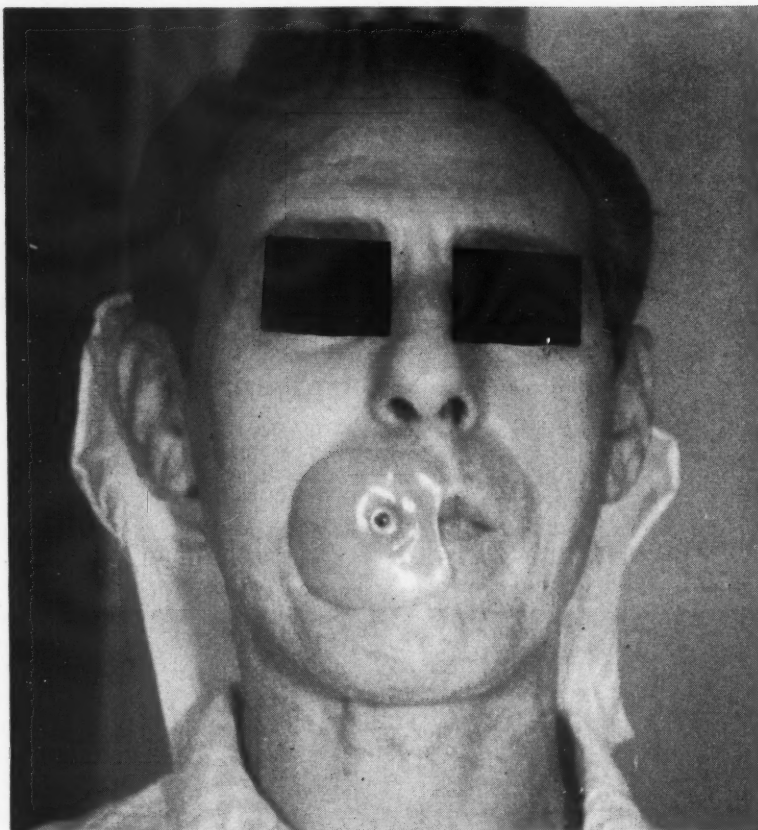
3. After the alginate was set, a mix of quick setting plaster as a backing was applied and when this was set, the impression was removed. The gauze acted as a binder between the plaster and the alginate.

4. A model was poured in stone. When it was separated, a model was provided of the right side of the face including a record of the position of the bolt and the mouthpiece of the instrument.

5. An acrylic plate was now processed which covered the lower half of the face, as far medial as the spot where the patient wished to place the mouthpiece of the instrument. This



4. The plastic outer plate (top) and foam rubber pad. Note that the opening for the bolt is rectangular.



5. The patient with the appliance in position.

plate was secured to the bolt by means of a nut, and the patient was able to regulate the pressure it exerted by turning the nut.

Seal Improved—The appliance was quite satisfactory but the patient reported that there was still some leakage of air around it when he attempted to play high notes. It was therefore decided to try to obtain a better seal by incorporating a compressible pad between the acrylic plate and the skin. The following steps were taken:

1. The pad was made out of a thin piece of foam rubber cut a trifle short of the periphery of the acrylic plate and with a hole to fit over the bolt.
2. A piece of rubber dam was cemented over the skin side of the foam rubber to eliminate absorption of saliva as much as possible.

Appliance in Use

With some practice on the part of

the patient he was able to return to work with the aid of the appliance. The appliance was used for several months before sufficient recovery was established so that the patient could play without prosthetic aid.

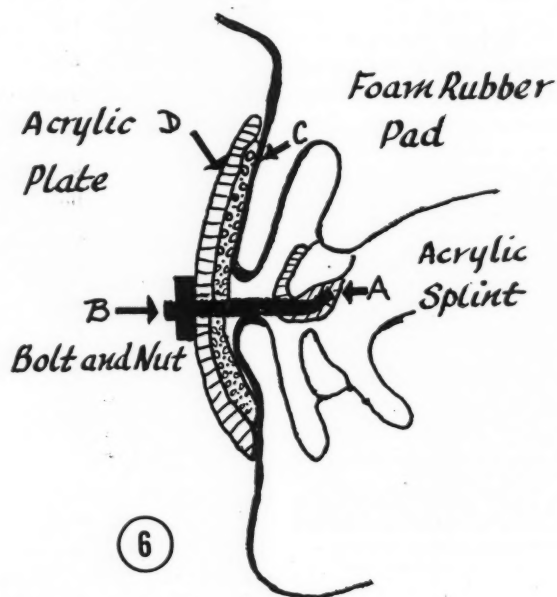
No Ill Effects—There was no apparent ill effects either upon the teeth or gingivae during the several months the use of the appliance was necessary.

Occurrence of Dermatitis—After a few days of intensive use the patient manifested a dermatitis under the rubber pad. This was attributed to the constant seepage of saliva onto the skin surface. It was successfully eliminated by the application of a lanolin ointment (hydrous, U.S.P.) to the skin area before each use of the appliance.

Conclusion

It is the belief of the author that this procedure would be of help to other victims of Bell's palsy in similar circumstances. It must be emphasized, however, that the patient must be extremely cooperative in adapting himself to the changed condition brought about by the introduction of an appliance.

1431 North Bayshore Drive



6. Diagram of appliance in position.

The EDITOR'S Page

A SYNDROME first described by Alvarez¹ as the "little stroke" is of concern to dentists. We see more and more people in dental practice who are in the age group where arteriosclerotic changes have occurred in their intracranial arteries. These people are subject to thromboses and from these "little strokes" they become difficult and perplexing patients because of deep personality changes. In addition, they often present the bizarre symptoms that are referable to tissues in the oral cavity: burning sensation, neuralgias, paresthesias.

What is a "little stroke?" As described in the effective and direct style of Alvarez:² "A little stroke may be suspected whenever (1), a man or woman past 38 or so has a mental and nervous disability that is out of all proportion to the little indigestion, abdominal, or thoracic pain complained of, (2) a nervous breakdown or a queer group of symptoms comes suddenly on a certain day, and (3) one learns from the family that after a dizzy spell, blackout, or perhaps a fall, there came changes in character and perhaps an inability to work."

Those who suffer these "little strokes" seldom lose their power of speech or their ability to walk; at least they do not lose these skills until a larger artery becomes plugged or a larger and more vital area of brain tissue is deprived of circulation. Because the "little stroke" is usually silent and undramatic, because it often occurs during sleep, it may be ignored by the family and by the physician. The personality changes downward toward fears, anxieties, petulance, irascibility are seldom evaluated by either the family or the physician in the true light as representing organic damage to the brain that follows anoxia that is the result of circulatory stasis. In consternation and with irritation the observers know that something has come over the victim of the "little stroke," but they do not ascribe the cause to an organic injury but rather to a psychic event as representing the bubbling up of innate meanness. It is sometimes hard for us to

remember that the psyche and the soma, the organic and the functional, the anatomic and the physiologic, the cause and the effect, are not the clean-cut antithetical entities that they are represented to be in textbooks.

We dentists will see these people as they will come to plague us with their indefinite and diffuse aches and pains, with their burning sensations and paresthesias. Every dentist can recall patients who fit these categories so well described by Alvarez:

"Commonly in older women and occasionally older men there comes a miserable burning sensation in the tongue or mouth, perhaps only on one side. There may also be a foul or metallic taste. When the trouble is only on one side, the physician [or the dentist] can be pretty sure that it is due to injury in a nerve center. I have seen this syndrome occur so often after definite strokes that now, when I see a person with it and cannot get a history of a stroke, I always suspect that one came during the night. In these cases I have never seen any treatment do any good, and the burning sensation may remain for years."

We have all seen these patients where Death whittled away at them piece by piece and over the years. We have seen these people degenerate in body, mind, and spirit—slowly and by degrees. These are the people who become childish, who are problems to their families and friends, who may perform criminal and antisocial acts, who lose their business abilities and professional skills, who become slovens in mind and body. Because there are millions of persons so afflicted with "little strokes" we will see them in many guises in the dental office. It is our job to recognize the awful aftermath of these episodes and to treat these people with full understanding for what they are: sufferers from serious brain damage.

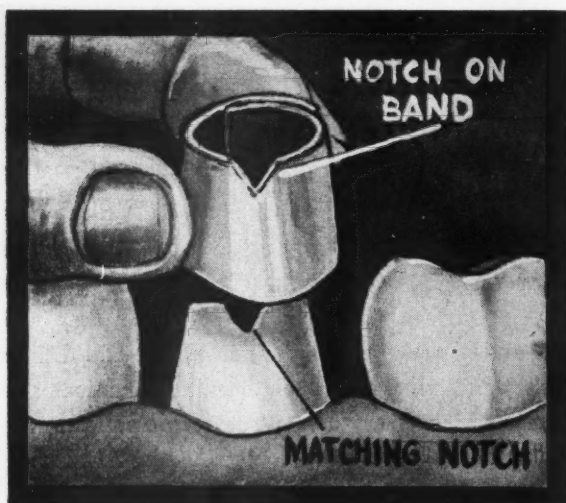
Doctor Alvarez³ warns dentists to hesitate in the extraction of teeth for the victim of "little strokes" because these people have difficulty in making an adjustment to dentures: "The extractions unfortunately added greatly to the person's misery."

¹Alvarez, W. C.: Cerebral Arteriosclerosis with Small, Commonly Unrecognized Apoplexies, *Geriatrics* 1:189 (May-June) 1946.

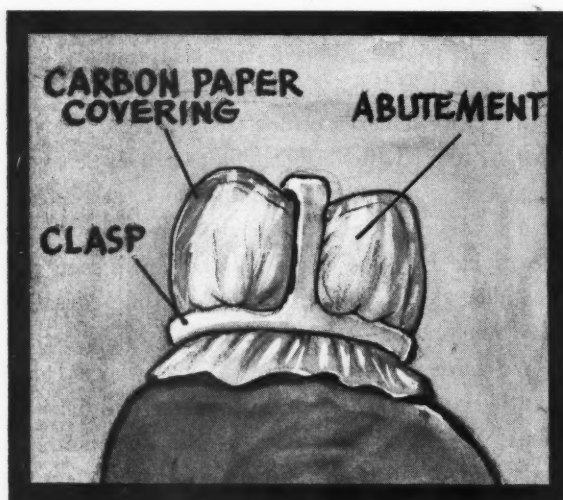
²Alvarez, W. C.: The Little Strokes, *JAMA* 157:1199 (April 2) 1955.

³Alvarez, W. C.: Personal Communication.

1



2



3



Clinical and Laboratory

Accurate Seating in Full Crown Castings

David M. Barish, D.D.S., Bronx, New York

1. When making a full crown preparation, cut a notch on the buccal of the tooth and on the buccal of the copper band. These marks will enable one to distinguish the buccal from the lingual after the die is poured.

Fitting Cast Crown or Cast Clasp

Estelle Natelson, D.D.S., Brooklyn, New York

2. Place a thin piece of two-sided carbon paper on the preparation or on the tooth. Carry the cast crown or clasp to position. The interference will be marked and shown by the carbon spots. Relieve the interference. Adjust the casting or the clasp until it fits satisfactorily.

Precautions in the Use of Investments

E. J. Le Du, D.D.S., Oakland, California

3. Casting investments are made of a mechanical mix of ingredients which will allow a settling out or separation of the component parts. To prevent this change in composition of the investment, the stored container should be turned over periodically.

READERS are Urged to Collect \$10.00

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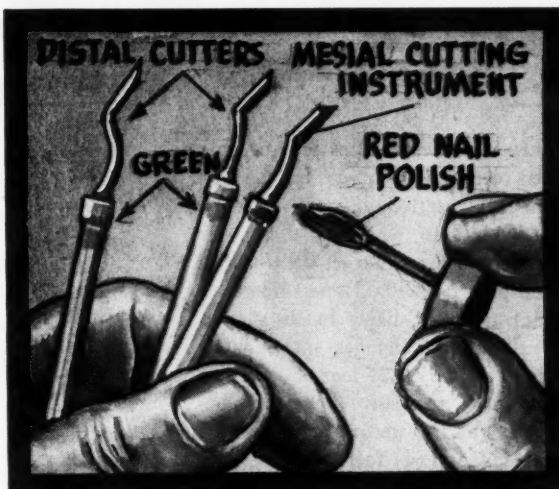
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Identifying Cutting Instruments

Milton R. Walter, D.D.S., Bellevue, Washington

4. To identify cutting instruments, paint a ring of *red* nail polish around all the mesial cutting instruments and a ring of *green* around the distal cutting instruments.

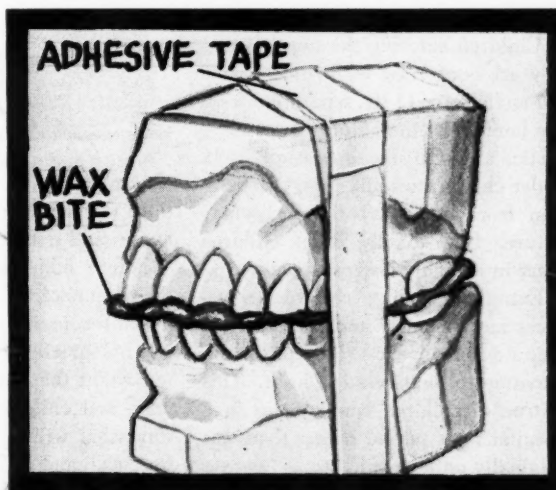


4

Shipping Stone Models

J. H. Van Ness, D.D.S., Ithaca, New York

5. To prevent chipping of stone models and warping of wax bites, place the models in the bite and tape the upper and lower models together with adhesive tape.

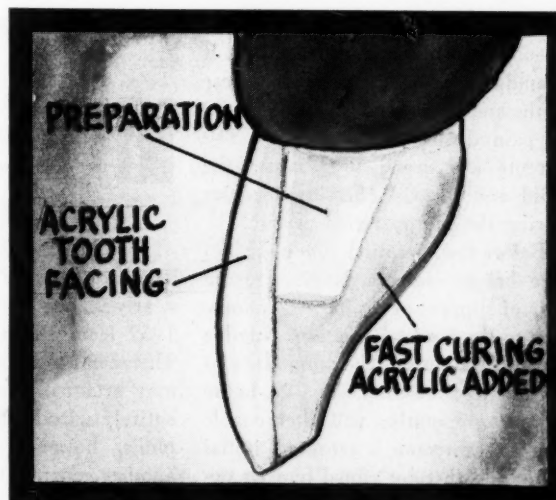


5

An Esthetic Temporary Crown

Vernon R. Damer, D.D.S., Peru, Illinois

6. Select an acrylic tooth of proper shape and mold. Trim away the lingual portion with an acrylic stone. Position the trimmed facing on the tooth preparation and build up the lingual with one piece of fast curing acrylic. After two minutes remove the facing, trim to proper contour and cement.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 278 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.



Surgery for Children

When it becomes necessary for children to undergo surgery for the first time their reactions vary considerably. Older children, especially those over five years seem to forget their stay in a hospital quickly. Those under five years are more likely to show transient behavior changes such as (1) fear of the dark, (2) fear of being left alone, (3) regressive behavior phenomena of bed-wetting and wanting to be fed, and (4) fear of doctors and nurses. Older children are more likely to display (1) disobedience, (2) temper tantrums, (3) increasing dependency, and (4) spiteful, defiant behavior.

Children entering the hospital usually are concerned with three principal anxieties: (1) the separation from the home, (2) the nature of the anesthetic, and (3) the operation itself. Older children usually regard separation from home as of a temporary nature. Occasionally young children react in a highly charged manner.

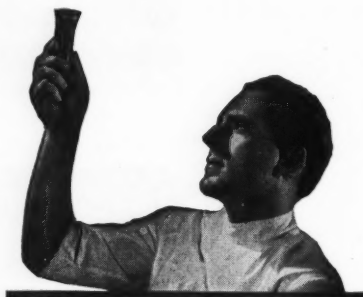
Extremely young children sometimes feel so lonely and deserted that they do not appear to pay too much attention to the operation itself. This is true of children who remain in a hospital for a period longer than was originally anticipated.

In the case of tonsillectomy it is suggested that the child be given a forthright explanation of the reasons for the operation. A recognizable word-picture may be drawn of the hospital, the nurses and the doctor. It should be pointed out that the purpose of the anesthetic is to relieve the child of pain during the operation. The parents are urged to reassure the child and display affection for him during the postoperative period.

Before the operation, a young child who brings along a familiar toy, a pair of slippers or a pillow on admission to the hospital creates a tangible tie with his home. The admittance of a child to a hospital some 24 hours before an operation will often enable him to overcome a sense of initial panic and thereby afford him an opportunity to establish amicable rela-

M E D I C I N E

and the Biologic Sciences



tions with his fellow patients and with nurses and doctors.

Before admission to the hospital, the parents can play an extremely important role in preparing the child psychologically and emotionally. It is important that all three (mother, father, and child) know in a general way what will ensue in the hospital. Parents, and mothers particularly, need guidance in preparing a child for a hospital experience.

Editorial: Children as Surgical Patients, JAMA 154:509 (February 6) 1954.



Syphilis

In the United States the incidence of syphilis has been dropping sharply. The rate of fresh infections declined nearly 90 per cent between 1947 and 1952 from 107,000 to 12,000 cases. This seems to indicate that the disease may eventually be controlled, if not entirely wiped out. Cases of late syphilis, however, will be seen for another generation. Penicillin was introduced as a treatment for syphilis in

1943. It is given for a few days or weeks and has entirely replaced dangerous medication with arsenic, bismuth, or mercury necessitating therapy of months or years.

A serum level of 0.3 unit of penicillin per cubic centimeter maintained for seven to ten days eradicates seronegative infection in nearly 100 per cent of cases and seropositive primary and early secondary types in about 85 per cent.

Outpatient therapy with repository penicillin is an effective substitute for aqueous dosage in a hospital. A total of 6,000,000 units may be given in 10 parts once daily or every other day or twice weekly.

Congenital syphilis is prevented by 6,000,000 units taken by the infected mother at any time of pregnancy, but preferably before the seventh month. Latent syphilis, early or late, and benign late gummatous stages respond to the schedule used for early cases.

Penicillin is particularly beneficial for patients with neurosyphilis, though neurologic and cardiovascular types may need total doses of 10,000,000 to 20,000,000 units or more and slightly longer courses.

After treponemal infection with syphilis, yaws, or pinto, large amounts of an antibody termed reagin are found in serum. The substance reacts with beef heart lipoid antigens in routine syphilis tests. However, the same or similar reactive material can be detected in (1) minute quantities in most healthy people, and (2) larger amounts resulting from various non-syphilitic factors. A false reaction should be suspected when results are positive for anyone, sick or well, who has had no syphilitic infection or exposure and has no physical evidence of actual disease.

Apparently most chronic BFP reactors have abnormal gamma globulin and tend to have blood disorders, particularly anemia and bleeding. Many have proved or probable collagen vascular disease, usually disseminated lupus erythematosus or rheumatoid arthritis.

Moore, Joseph E.: The Changing Pattern of Syphilis, Ann. Intern. Med. 39: 644-649 (November) 1953.

(Continued on page 274)

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Melanoma

Melanoma is found usually on the lower extremities, especially the feet. It may occur, however, anywhere in the body and constitutes 1 to 2 per cent of all malignant tumors.

These tumors may be fulminating or may grow quite slowly. The danger signs in a junction nevus, requiring prompt action are (1) increased size, (2) activity, (3) color change, (4) pain or discomfort, (5) infection, (6) bleeding, (7) crusting, and (8) ulceration. Nevi in the eye, on the soles, palms, fingers, toes, vulva, scrotum, or subungual region or in areas of chronic irritation on the trunk are especially suspicious.

The only safe method of establishing diagnosis is biopsy by total excision of the lesion. The tumors should never be cut into. Even aspiration biopsy of a node can be hazardous, unless extremely radical surgery is contemplated.

The only efficient therapy for ma-

lignant melanoma is surgery. Whenever possible, wide removal of the primary tumor, with regional lymph node dissection in continuity should be done. The nodes, although not palpable, may be metastatic.

Even in the most favorable cases of melanoma of the eye, recurrence and metastases may occur years later, necessitating further surgery.

The thumb and toe are common sites of subungual malignant melanoma. The color deepens in a growing pigmented area. The nail begins to crack and then ulcerates. Radical treatment includes amputation of the digit, with regional node dissection later.

Melanomas arising at the anal margin or in rectal polyps are deadly, with an unpredictable metastatic spread by the lymph or blood stream. Radial abdominal-perineal excision is done, followed by bilateral groin and deep iliac node dissection.

The prognosis when pregnancy complicates melanoma is grave, probably because of hormonal stimulation of the lesion. A woman should wait

at least three years before becoming pregnant after surgery for melanoma. Placental transmission of tumor cells is possible.

The five-year survival rate is about 52 per cent when wide removal and node dissection are done for malignant melanoma. When nodes are affected the rate is about 33 per cent. When nodes are not affected a 67 per cent five-year survival rate is noted.

Meyer, Herbert Willy, and Gumpert, Stephen L.: *Malignant Melanoma*, Ann. Surg. 138:643 (October) 1953.

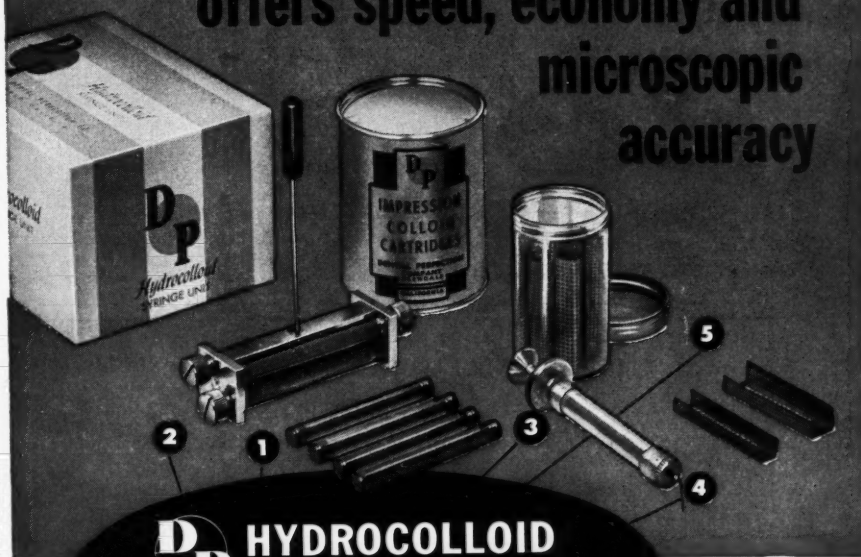
World Program for Dental Health

A GROUP of consultants under the chairmanship of J. W. Knutson, D.D.S., U.S. Public Health Service, Washington, D. C., submitted recommendations for a World Health Organization program for dental health, of which the major components are to be education, prevention, treatment, and research.

Dental Disease Explained—Dental diseases are not only widespread but also expensive. In the United States dental disorders affect more than 90 per cent of the population, which spent 1.6 billion dollars in 1953 for dental care, one-sixth of the total amount spent for medical care on an individual basis. In Great Britain, the National Health Service spent \$110,300,000 for general dental services in one year (1949-1950), excluding expenditures by local health authorities on dental care for pregnant and lactating women and for children. In the same country in 1952, 88 per cent of 5-year-old and 98 per cent of 10-year-old children were found to have dental caries. The situation is similar in other so-called advanced countries.

Types of Dental Disorders—Although the various types of dental disorders are not equally distributed among the world's population, one or more of the following diseases is widespread in most areas of the world: (1) dental caries; (2) periodontal diseases, which because they rarely cause pain, are often neglected; (3) irregularities of the teeth and jaws with serious physical and psy-

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chologic results; (4) hare lip and cleft palate, which occur once in about 800 live births; and (5) oral cancer, which still comprises about 8 per cent of all reported cases of cancer.

Preventive Measures Suggested—The extent of the problem, and the huge and persistent disparity between dental needs and resources, even in the more advanced countries, has so far resulted in resignation or even indifference on the part of the public, and even of health authorities. The

first task is to teach people to use available preventive measures, such as good dietary habits (especially eating less sticky, fermentable, soft foods), oral hygiene, and the fluoridation of water supplies. The use of stiff, pointed twigs to clean teeth, a common practice in some areas, should be discouraged.

Adapted from *Journal of the American Medical Association* 157:363 (January 22) 1955.



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(See pages 270 and 271)

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Subject: _____

Explanation of Procedure:

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Contra- Angles



Sir Isaac Newton and Two Modern Englishmen

Shortly before his death the great Sir Isaac Newton in simple modesty summed up his life's knowledge in these words of humility:

"I do not know what I may appear to the world but to myself I seem to have been only like a boy playing on the seashore and diverting himself in now and then finding a smoother pebble or a prettier shell than ordinary whilst the great ocean of truth lay all undiscovered before me."


This was the man who contributed immensely to our knowledge of light and colors and to the principles of mathematics. He was a scientist of first order.

How unlike are some of our modern scientists to Newton. Pomposity, dogmatism, inflated ego are common among the moderns. So many write and speak with the air of Sir Oracle. They take no time out from the admiration of self to look at themselves or to question their beliefs and assumptions.

In our small world of "smoother pebbles and prettier shells" we have become overly impressed with the merits of fluoridation to reduce dental caries in children. The "great ocean of truth" that is outside dental disease—disruption of the balance and homeostasis of the body as a whole—is a territory unexplored and one that we are inclined to disregard.

An experiment of such sweeping magnitude in which the lives and health of millions of people are involved is not the place to force one's point of view upon a community unless he is sure of every fact and every facet.

On both sides of the issue we find violence. The advocates of fluoridation, in their rough-shod and super-



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cilious treatment of the opponents, are not in a commendable position. There are cases where honest opponents of the measure have been savagely attacked and denied the privilege of expressing their opinion before a professional group or in a professional journal. The opponents, on the other hand, have often risen to fever height emotions and have called the fluoridation advocates agents of Moscow who are willfully leading a conspiracy to poison the American people. This kind of nonsense has no place in the argument.

It is not unexpected that the public who are supposed to profit or lose from fluoridation of water supplies has taken an active part in the debate, often without a body of facts to support their arguments. The aloofness of some of our biochemists, the tendency of dentists to think exclusively in terms of tooth decay, the indifference to possible health hazards on the part of physicians are attitudes that are not helpful. When men who are supposed to be scientists looking into "the great ocean of truth" are so restricted in their views the public turns to quacks and pamphleteers for misinformation.

To get some perspective on the subject and points of view that seldom find expression in the American science press, we may turn to Great Britain for the views of two scientists who represent the two sides of the fluoridation issue.

A nonmedical biologist, C. G. Dobbs, Ph.D., writes in the *British Medical Journal*:

"This undoubtedly amounts to compulsory treatment with a toxic substance intended to produce a physiologic change in the body, to be administered indiscriminately by medically unqualified persons, and in amounts varying widely with the consumption of water and the concentration of salts in it by boiling.

"The public is being assured that the medical profession is virtually unanimous in its approval of this project both in its ethical aspect and in its positive certainty of the complete innocuousness of fluorides at the proposed low concentration, even for daily consumption for an indefinite

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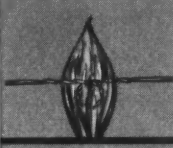
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period. Indeed, the writer, a non-medical biologist, has been challenged to produce any medical opinion in this country which is critical of fluoridation, and so far has failed to do so. If this unanimity really exists, or is allowed, as at present, to pass by default, then the profession must be prepared to bear the brunt, for the Government, of the inevitable public opposition to mass-dosing without consent, as well as the responsibility for any damage, physical or psychologic, which may result from it. However, inquiries among my own medical acquaintance seem to show that, whereas any professional meeting can be relied upon to pass a resolution favoring fluoridation, no individual doctor can be discovered who claims to know much about its effects, or to be able to diagnose slow chronic fluoride poisoning if it should occur. If this is the situation the 'experiment' could do widespread damage without anyone's being the wiser, and the value of statistics 'proving' the absence of fluoride poisoning at the proposed concentrations would be nil."

Next, a physician, A.M. Thomson, a proponent of fluoridation, answers the biologist:

"As a member of the independent mission which investigated American experience with fluoridation and reported to the Ministry of Health, the Medical Research Council, and other

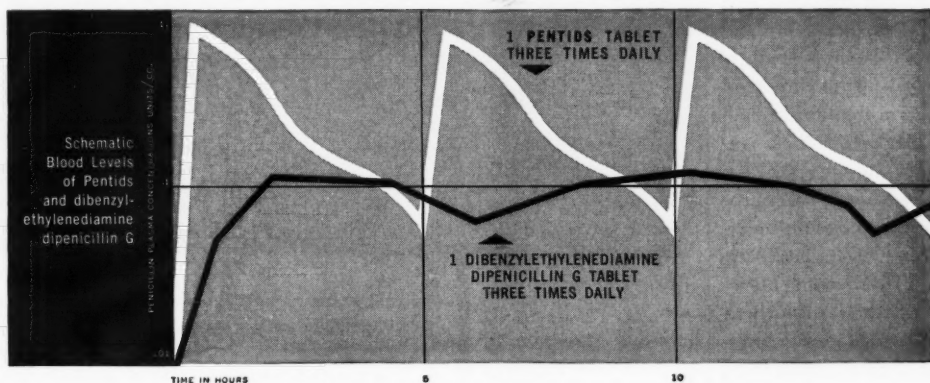
interested bodies, perhaps I may be allowed to comment. The mission, in its report, felt justified in drawing four main conclusions. First, there is abundant evidence, from Britain as well as America, that lifelong consumption of water containing fluorides at levels around 1 part per million results in a substantial reduction of the incidence of dental caries in children, and probably in adults also; in view of the prevalence of the disease, the shortage of dental manpower, and the absence of any other practicable preventive measure, the benefits of fluoridation (adding fluoride at a level of 1 ppm to waters not naturally so endowed) are of great value. Secondly, there is no scientific evidence whatsoever that fluoridation involves any danger to health, and very considerable evidence that it is harmless. Thirdly, the amounts of fluoride added to water can be controlled very accurately. Fourthly, evidence derived from the millions of people in Britain and abroad, who use waters containing about 1 ppm of fluoride, naturally present, is wholly reassuring both as to the absence of danger and as to the benefits resulting. It may be noted here that one of the earliest British reports on dental benefits related to children evacuated during the war from a natural-fluoride area; the school dentist in the reception area was im-

pressed by the fact that they had remarkably good teeth—much better than those of the local children."

"Doctor Dobbs uses the term 'medical treatment' for a measure which does not cure dental caries but helps to prevent it. I will not indulge in what he calls 'verbal quibbling,' but it seems necessary to remark that, in the lay press, he has written: 'The compulsory mass-medication of people via the public water-supply is the sort of thing which has not been tolerated by civilized European opinion, or practiced in Europe, so far as I know, outside the concentration camp (at least until very recently).' This is the kind of highly-colored and unscientific language which is best avoided in debating the factual merits of a case. The ethics of compulsion, of course, are always good for heated argument, as is shown by the whole history of advance in public health; in the present instance, I should like to make it clear that no alternative to public water supplies as a vehicle for fluorides can at present be advocated on technical grounds or on those of safety.

"It seems scarcely necessary to point out that fluorides will not be 'administered indiscriminately by medically unqualified persons.' The word 'indiscriminately' ill describes a process which will be conducted with strict administrative, mechanical, and chemical controls, and supervision will, of course, include that of the medical officer of health. Variations in the amounts of fluoridated water ingested by individual consumers are known to be without significance for health, within the very wide range of climates in the North American continent. Variations of consumption are almost certainly less in this country, and the question of individual intakes of fluorides has been closely examined. There is no risk that, in the unprecedented event of fluoridation causing damage to health, this will occur 'without anyone's being the wiser.' The arrangements in Anglesey and other areas where the water is about to be fluoridated will be subject to regular scrutiny by doctors [sic] and dentists who know the signs of fluorosis. It is not surprising that Doctor

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Dobb's medical friends are a little hazy about this condition, and about fluoridation generally; fluorosis is a rarity, and all of us would have to plead incomplete acquaintance with much of the recent medical literature.

"Finally, lest judgment be clouded by charges of 'mass-medication' or by dark hints about undiscovered but imminent hazards to health, it is well to reflect that in fluoridation we have a public health measure which has been studied and documented with unusual care and completeness; and that we in Britain have previously hesitated unwisely—for example, in relation to diphtheria immunization."

Finally, the scientist, Dobbs, answers in rebuttal:

"Doctor A. M. Thomson's letter provides an excellent example of the methods by which fluoridation has been promoted; namely, by sweeping assertions of knowledge in matters in which more cautious, or perhaps more humble, people admit their ignorance, supplemented by attempts to discredit opponents by a display of contemptuous language. It would have saved much trouble if the mission to the U.S.A., of which Doctor Thomson was a member, had presented both sides of the question fairly instead of behaving as a team of advocates for the proponent side. According to the report of this mission the case against fluoridation was given full prominence while they were in the U.S.A. at the hearings before the Delaney Committee. This committee, in fact, examined eighteen scientific witnesses, of whom seven were critical of fluoridation. Nevertheless, there is no evidence in the mission's report that they had visited or consulted any of these scientists; and, although a few words of the Delaney report are quoted and some criticisms of fluoridation are mentioned with a view to refutation, it is quite clear that the opposition case has been seen only through the eyes of its opponents. This bias is even clearer in Doctor Thomson's letter; and when it comes to the *ex cathedra* statements of public health officials there is no attempt to present the opposition case to the public, which is why persons such as myself have had to take a hand in the matter.

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"I cannot see what Doctor Thomson gains by jibbing at a plain accurate description of what he advocates. If 'medical treatment' is limited to 'cure' and excludes 'prevention' the 'medical' profession can have no status in the matter. If dosing everybody with something required only by children is not 'indiscriminate,' what is? Or does he hold that the scientific 'discrimination' exercised in putting the fluorides in the right reservoir is sufficient? And I

fail to see why this medical Big-Brotherism, with its insistence on invading every home and everybody through the water tap, should be regarded as 'scientific,' and an objection to it as 'unscientific,' except, of course, for propaganda purposes. Nice as it is to find the *North Wales Chronicle* so carefully read in Aberdeen, I think he was unwise to drag into this discussion from its pages a reference, quite correct in its context, to 'civilized European opinion'

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and to the precedents for medical tampering with the human body without consent. The ten standards laid down at the Nuremburg trials on August 9, 1947, for persons who initiate or engage in medical research on, or treatment of, human beings, start with this statement: 'The voluntary consent of the human subject is absolutely essential,' and I have yet to learn that the British medical profession regards itself as exempt from this standard of conduct. In France,

I am informed, the Dental Convention in Paris has recently rejected fluoridation as contrary to human rights, local governments have no power to order it, and the Institut Pasteur and the Ministre de Sante-Publique have not approved it.

"If it is true, as Doctor Thomson clearly implies, that the medical profession, which is not without experience with dangerous drugs, can yet find no safe way of administering fluoride, under normal conditions of

consent, only to those who may be expected to benefit, I cannot see how the public can be expected to consent to the putting of this substance in the general water supply. The statement that 'variations in the amounts of fluoridated water ingested by individual consumers are known to be without significance for health' would be sufficiently staggering if the word 'fluoridated' were omitted. With the bottom limit for 'chronic low grade poisoning' officially placed as low as 2 milligrams daily, as compared with 1 to 1.5 milligrams of fluoride daily for preventive dentistry, it makes no sense to me.

"Finally, I come to the actual evidence upon which the proponents of fluoridation base their astonishing claims to knowledge of its harmlessness to individuals. The evidence is almost entirely statistical, and, considered as such, unconvincing to the point of absurdity. The Bartlett-Cameron comparison reviewed in your annotation 'Fluoride in Water' seems to be, to date, the most careful long-term investigation into the effects of fluorides upon health, other than dental decay. But here we find, not the 'evidence from millions of people' mentioned by Doctor Thomson, but a comparison of two populations of about 120, of an age-distribution so different that 14 deaths in one is not significantly different from four deaths in the other. Just to make it funnier, the younger population turns out to have nearly twice the incidence of cardiovascular disease found in the older, and, to round it off, the water of the 'control' town has more than the average amount of fluorine in it (0.4 ppm). Certainly it is quite true to say that this comparison has produced no evidence of damage due to fluoride at 8 ppm, but such a statement is completely misleading unless accompanied by an estimate of the number of people in Bartlett who would have had to suffer death or observable damage through ingesting fluoride in order to produce a significant result. It seems obvious, even on the limited data available, that, with samples of this size and variability of this order, the disaster to

(Continued on page 288)

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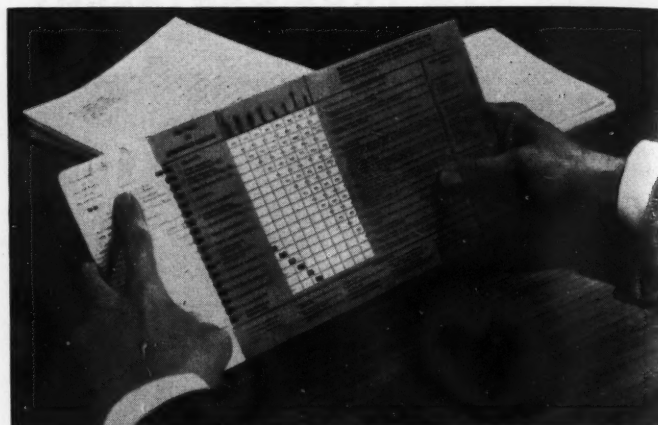
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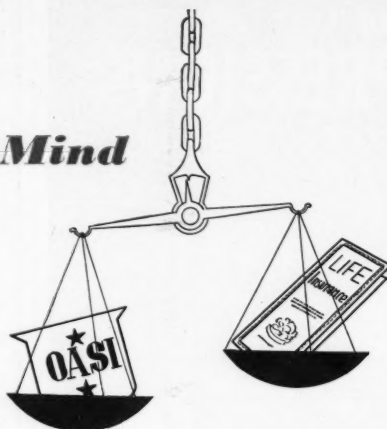
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"The great danger of the chronic subclinical forms of nutritional deficiencies is that they do permanent damage to the cells of the body . . . Several of them show their first warning signals in the mouth. To detect nutritional deficiencies and to aid in correcting them is one of the noblest services that the dentist can perform."

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"What About Your Eyes?" asks Doctor Donald Hersh. If you have poorly adapted near-point vision (even though that vision is clear and unblurred), you will find that, because it requires extra energy to force your eyes to do their job, you will tend to tire easily. Better make sure that your eyes have every aid they need—whether it be light, lenses, or exercise.

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J. F. Honold analyzes three types of common stocks (stable, cyclical, and growth) and suggests that dentists familiarize themselves with the advantages—and disadvantages—of each type before making major investments.

(Continued from page 285)

health in Bartlett would have had to have been catastrophic to have reached statistical significance. So far as I know, no one has entertained the idea that fluoride at such low concentrations could produce damage of that kind, so that the 'evidence' is entirely irrelevant to the question of the possible hazards of fluoridation. The mortality statistics of 22 Illinois cities, published in the British mission's report are equally unconvincing. The only thing demonstrated is the irrelevance of the statistical approach to this matter."

Both Dobbs and Thomson are likely to be noble chaps and sincere fellows. Here they are, getting hypertensive in their arguments, insisting "I'm right, you're wrong" in an issue that should not be one of personal opinion. The issue of fluoridation is a scientific one that is to be met by measurement and not by emotion. We must control ourselves in this debate even if it is sometimes a difficult discipline.

—E. J. R.

Advertising Index

Anacin	241
Baker & Co., Inc.	282
Caulk Co., L.D.	281
Columbus Dental Mfg. Co.	275
Continental Chemical Co.	278
Cook-Waite Laboratories, Inc.	3rd Cover
Dental Perfection Co.	277
Dentists' Supply Co., The	4th Cover
Interstate Dental Co., Inc.	287
Jefferson Hotel	280
Ney Co., The J. M.	243
Pfizer Laboratories	244
Rocky Mountain Metal Products Co.	242
Rystan Co., Inc.	279
Squibb & Sons, E. R., Div. of Mathieson Chemical Co.	283
Universal Dental Co.	2nd Cover
White Dental Mfg. Co., The S. S.	274, 284-85
Whitehall Pharmacal Co.	241
Williams Gold Refining Co.	273
Young Dental Mfg. Co.	274
Z & W, Inc.	280